Borough of Leicester.

FORTIETH

ANNUAL REPORT

UPON THE

HEALTH OF LEICESTER,

ANNO DOMINI

1889,

AND THE PROCEEDINGS TAKEN TO PREVENT
ADULTERATION OF FOOD, &c.

BY

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Royal College of Surgeons of England
21 MAY 90

Corporation of Leicester

MEMBERS OF THE

Sanitary Committee.

———:(o);———

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———:(o):———

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HEALTH DEPARTMENT,
TOWN HALL, LEICESTER,
March 31, 1890.

To the Chairman and Members of the Sanitary Committee.

GENTLEMEN,

In submitting to you the fortieth annual Report upon the Health of Leicester, it is a matter of much satisfaction to me to be able to present one of so favourable a character. With a death-rate of only 16·7 per 1000, Leicester is third on the health roll of the large English towns.

Amongst the numerous matters treated of, reference need be made here to two only. Firstly, to Dr. Ballard's report upon Diarrhœa, with special reference to Leicester. This enquiry, commencing originally in the interests of our own town, has gone on for many years, and the conclusions Dr. Ballard has arrived at are quoted in full at page 21. Secondly, what I trust will be found an interesting retrospect of the vital statistics of Leicester, for the last thirty years, is given at page 48, and ample evidence is there afforded of the sanitary progress of the Borough during that time.

Following the same plan I have hitherto adopted in writing these Reports, I have divided the matter into three parts. In the first an account of the chief subjects connected with the public health is set forth, as free from figures and statistics as possible; in the second is the Report of the Fever Hospital; whilst in the third part the Vital Statistics of the year under review are fully tabulated and detailed.

I remain, Gentlemen,

Yours obediently,

HY. TOMKINS.

By an Order of the Local Government Board, dated March, 1880, Article 18, Section 14, it is prescribed, that every Medical Officer of Health shall—

"Prepare an Annual Report, to be made to the end of December in each "year, comprising a summary of the action taken during the year for "preventing the spread of disease, and an account of the sanitary state of "his district generally, at the end of the year.

"The Report shall also contain an account of the inquiries which he has made "as to conditions injurious to health existing in his district, and of the "proceedings in which he has taken part or advised under the Public "Health Act, 1875, so far as such proceedings relate to those conditions.

"Also an account of the supervision exercised by him, or on his advice, for "sanitary purposes, over places and houses that the Sanitary Authority "have power to regulate, with the nature and results of any proceedings "which may have been so required and taken in respect of the same "during the year.

"It shall also record the action taken by him, or on his advice, during the "year, in regard to offensive trades and to factories and workshops.

"The report shall also contain tabular statements of the sickness and mortality within the district, classified according to diseases, ages, and localities."

Report
of
Medical Officer of Health,
for
1889.

ROYAL COLLEGE OF SURGEONS OF ENGLAND
21 MAY 90

Part I.

SANITATION GENERALLY.

Probable over estimate of Population.

Health of the Borough in 1889.—One of the highest authorities upon vital statistics, in his day and generation—the late Dr. Farr—gave it as his opinion that the normal death-rate of a large town population might be set down as 17 per 1000. During last year the death-rate of Leicester was 16·7 per 1000, the lowest that any Medical Officer of Health for the Borough has ever had the pleasing duty to record. To all those charged with the sanitary administration of the town, such a record must be exceedingly gratifying, though, no doubt, they will be the last to admit that still further improvement may not be looked for. A word of warning should be given, however, respecting the low death-rates of this and the preceding years. These rates are based upon an estimated population, as calculated by the Registrar General, and it is by no means certain that the increase which took place between the census of 1871 and that of 1881 has been maintained since the latter date; and probably, when we have the figures of the approaching census in 1891, some correction of the last few years will be found necessary. But setting this possible source of error aside, which after all cannot amount to a very large one, that length of days has been added to the lives of our population is shown by the actual diminished number of deaths recorded, notwithstanding the increase in the population. Thus in 1886 there were 2738 deaths, in 1887 the total was 2722, in 1888 it reached only 2640, and in the year now under review only 2513. Our position upon the health roll of the large manufacturing towns of the country has not passed unnoticed, as the following extract from one of the leading Manchester papers shows. Referring to the report of 1888 it says, "The Annual Health Report for 1888, of the Borough of Leicester, is a highly satisfactory document, and will doubtless receive from the sanitary reformers of our own city the attention it deserves. Whether the Corporation of Leicester has been urged to undertake a bolder policy, and to initiate and carry out prudent reforms with greater energy than might have been the case had not the town been supposed to be liable to peculiar danger from one special form of disease, we will not venture to say; but it is assuredly to the honour of the borough that its sanitary condition ranks so high. And that this is not due to accidental circumstances is apparent from the fact that the death-rate has been gradually diminishing as the reforms have been effectively pursued, and Leicester now stands seventh on the health roll of the great towns, whilst Manchester, alas! is at the bottom of the list. * * * There can be no doubt that the Sanitary Committee of the Leicester Corporation are not only alive to their important responsibilities, but that they have succeeded in removing a considerable amount of preventible disease. Would not our own city Council do well to send a select deputation in order to learn what is to be learnt at Leicester, of the means by which a death-rate can be reduced nearly 30 per cent. in eight years."—*Manchester Guardian.*

Criticisms on Health Report of Leicester.

Complimentary as these remarks are, and encouraging to those who have for many years laboured in the interests of the health of the town, there still remains work to be done, and blots to be wiped away, ere Leicester can present an entirely satisfactory bill of health. Foremost amongst these stands, the still excessive infantile mortality. This subject, together with others requiring attention, will be alluded to in their proper place in this Report. That the improved condition has been steady and progressive is well brought out in a retrospect of the last thirty years, and especially is the improvement seen in that class of diseases over which an efficient health authority has most control (see retrospect of last 30 years, on a subsequent page). This retrospect is interesting and instructive, as comparing Leicester at the present time with her condition a quarter of a century ago.

Lessened amount of sickness in 1889.

Prevalence of Disease in 1889.—In a general way the amount of sickness and disease prevailing in any town and district, may be roughly guaged by the mortality caused by the various diseases. Upon considering the mortality returns for the past year (see Mortality Tables, in Appendix), we find a reduction in each of the important groups of diseases; thus in the zymotic group there are 59 less deaths than in the previous year; in the constitutional there is a decrease of three; in the large group of local diseases a decrease of 83; and in the developmental diseases a decrease of 39.

But our knowledge as to the amount of sickness caused by the zymotic, or infectious diseases, is much more exact, for, by means of the notification of the more important of these, we are able to state the *actual number of persons who have been ill* from the diseases which are thus notified.

Notification for the whole country.

Compulsory Notification of Infectious Disease. One of the most important pieces of sanitary legislation of recent years has been effected during 1889. For more than ten years compulsory notification has been in operation in Leicester, with the best results, as many previous Health Reports testify. Other towns, upwards of fifty in number, have also acquired similar powers, and as a result of the experience thus gained, in more than one session of Parliament, a Bill has been introduced, having for its object the enforcement of similar provisions throughout the country at large; but from one reason or another, as private Bills, they have never succeeded in getting placed upon the statute book.

The opposition to such a measure was unreasonable and puerile. If it had been proved a good and beneficial arrangement at Leicester to notify there infectious cases, surely it must be the same for Liverpool. If it was not for the public benefit that infectious disease should be concealed, and its whereabouts unknown to the authorities of Edinburgh or Manchester, surely it must be of like detriment to the dwellers in London or Birmingham; yet London, Liverpool, Birmingham, and other places were without this most efficient aid in combating the spread of zymotic disease.

To those who appreciated the benefits to be derived from a general application of this law, it was, therefore, a matter of much satisfaction when Mr. Ritchie, the President of the Local Government Board, after obtaining full information as to the working of the Acts, from towns which had already obtained these powers, and to which Leicester contributed a very valuable quota, introduced a Bill into the House of Commons during the past session, which, after some little opposition, passed into law. The opposition was, however, sufficient to prevent its becoming *at once compulsory throughout the whole of the country*. It came into operation in London on November 1st, but for the rest of the Kingdom it was left to the various sanitary authorities to adopt the provisions of the Act at their discretion, but having once been adopted they cannot again be set aside.

It is satisfactory to find that at the time of writing, the Act has been adopted in 700 sanitary districts, including nearly all the large towns, so that there are now, including London, some 18,000,000 of the population amongst which compulsory notification is, or about to be, put into operation. Further, it was more than hinted in the debate upon the Bill, during its progress through Parliament, that unless local authorities showed sufficient alacrity in adopting it, additional powers would be obtained to compel them to do so. Amongst the few places that have deliberately refused to adopt the measure is Brighton, a town one would have thought that should have been most ready to avail itself of such a safeguard to its reputation as a health resort. The principle of the Bill is but an extension of an old command; in effect it says "*Thou shalt not* conceal a case of infectious disease, which unknown and unguarded against may *kill* needlessly another person."

For Mr. Ritchie's use, information was supplied, by request, by your Officer of Health as to the actual benefits known to have resulted in Leicester, together with a copy of a paper* read before the Society of Medical Officers of Health, in London, the concluding paragraphs of which, as summarizing Leicester's experience, may not be without interest here:—

> "(*a*) That the theoretical objections advanced against the dual system are not borne out in practice, but that in many places where the strongest opposition was at first manifested by the profession a very short experience, as at Leicester, had served to allay all opposition and convert opponents into warm supporters and advocates.
>
> "(*b*) That the good results arising therefrom are palpable and self-evident; thus, to again quote my own borough, by its means, time after time, outbreaks of dangerous disease have been seized and nipped in the bud, and their spread entirely prevented. That by its means a vast amount of sanitary inspection is brought about, and dangerous defects and nuisances remedied and abated. That the attendance of children at our large elementary schools is effectually controlled where it is necessary to prevent disease spreading. That effective supervision is maintained over callings, trades, and occupations by means of which disease might be spread to the community at large.
>
> "(*c*) That effective disinfection can in every case be carried out, in place of the shams which too often did duty for it in the past.
>
> "(*d*) That effective and true isolation of patients is secured in the majority of cases of the more dangerous diseases.

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*"Compulsory Notification of Infectious Disease," read by me at the above Society, on January 18th, 1889, and published in the February number of *Public Health*.—H.T.

During 1888, out of 130 cases of Scarlet Fever that occurred in Leicester, 95 (or 73 per cent.) were removed to hospital.

"(*e*) And lastly, that all this is acting gradually as a powerful educator of the masses of the people, and bringing home to them in an unmistakable manner, some of the first principles of hygiene and health."

Collection and distribution of Returns by Local Government Board.

The Local Government Board has now for twelve months carried on the useful work of collecting weekly from most of those places that had already possessed themselves of "notification powers," the returns of the cases of infectious disease occurring therein, and of distributing a copy of the whole of these returns to each of the contributing towns. What use, if any, the department will attempt to make of the very much enlarged returns that will now be available, remains to be seen. It would appear to be desirable that some such system of national registration and distribution should be put in operation, as now exists in connection with the registration of deaths by the Registrar-General.

Increased Prevalence of Scarlet Fever.

Amount of Infectious Disease in 1889.—Until the closing months of the year, the Borough was comparatively free from infectious disease, and nothing approaching epidemic prevalency existed; but in the beginning of October the cases of Scarlet Fever reported began to increase rapidly in number, and notwithstanding the prompt removal to hospital of a very large proportion of the cases, it continued to prevail up to the close of the year, averaging 16 fresh cases per week during the last three months of the year. Cases of carelessness, and want of the simplest precautions to prevent the spread of the disease, were as usual not infrequently met with, for even yet the less educated classes of the community appear to hold a sort of fatalistic theory about these ailments, "if they are to have them they will have them," &c. In one instance wilful concealment, and omission to report the existence of Scarlet Fever, in a house where a small business was carried on, was discovered. The offender was prosecuted, and a fine of 40/- and costs imposed.

At the same time, the town was placarded with notices reminding parents and householders of their obligation, in the absence of any medical attendant, to report all cases to the Officer of Health. No further case of attempted concealment came to the knowledge of the Sanitary Committee.

As to the causes at work producing this increase, but little can be stated with certainty: every case was individually investigated as it arose, and in many personal contagion was distinctly traced as a cause; but in a large number no such origin could be found.

Causes at work inducing zymotic disease

In London, as well as in many other parts of the country, Scarlatina began to prevail extensively in the late autumn, no less than 1600 cases being under treatment in the London Hospitals in October last; and in Birmingham and Plymouth the outbreak assumed very large proportions. The more experience one has in studying outbreaks of these infectious diseases, the more the truth is forced upon one that other influences are at work conducing to their spread, beside those of simple personal contagion. This latter is an all important factor without doubt, but other causes are in operation of which at present we have but little knowledge. Possibly some such influences as those which, in the vegetable kingdom, produce the very varying results in the production of our fruit crops. Why in one year do our plum trees break down with their load of fruit, and another year, as in the past summer, strawberries are produced in enormous quantities; and so on with other classes of the vegetable world. It would appear that under certain varying meteorological conditions, the disease-producing germ finds at one time those conditions favourable to its growth and development, and at other times no such favourable environment. The present outbreak of Influenza affords a striking illustration.

Outbreak of Influenza.

In the late autumn, reports were received of a severe outbreak of Influenza at St. Petersburg, which had apparently travelled from Siberia. Within a few weeks the disease had spread throughout Europe, and in many of the large capitals so great was the demand for hospital accommodation that temporary hospitals had to be erected, and during the closing weeks of the year the disease reached our own shores, spreading rapidly to all parts of the kingdom. The first suspicious cases occurred in Leicester in Christmas week, and from that time onward they increased rapidly in number: at the time of writing (February, 1890) it appears to be subsiding. Fortunately, the large bulk of the cases were of a mild type, and few fatal attacks have been recorded, though the deaths from respiratory diseases were large in number.

An opportunity occurred for your Officer of Health to see some of these cases in the Parisian Hospitals, and there is no room for doubt that the disease as seen here was the same as that on the Continent. It is now more than forty years since an epidemic of Influenza prevailed in England, and from the accounts then given of it we are able to say that the present outbreak closely corresponds in its symptoms with that of 1847.

Symptoms of Influenza.

In the more marked cases the onset was rather sudden, sometimes with, but often without, catarrh of the eyes and nose; intense frontal headache, or, in many cases, lumbar pains and aching of the muscles generally, were the more prominent symptoms, accompanied by great mental and physical depression, out of all proportion to the actual physical signs. The attack was accompanied with more or less fever, which subsided in the course of a few days, the temperature rarely exceeding 102 deg. F. in those cases where no complication arose. The principal danger was the tendency to Bronchial Catarrh and a low form of Pneumonia.

The opportunities thus afforded for the re-study of this disease have confirmed former experience, that there is an element of infectiousness about it when once it has become established in an individual, but, as already remarked, personal contagion gives no explanation of the rapidity with which the disease affected enormous tracks of country, spreading throughout the length and breadth of Europe in a few weeks, and even passing across the Atlantic, and establishing itself on the North American continent. We must at present confess that we do not know the ultimate causation and etiology of this and other zymotic disorders.

The total number of cases of infectious diseases brought to the knowledge of your Officer of Health by means of notification, during the year, has been 860, an increase of 111 on the year before. The figures for the two years are appended:—

	Small Pox.	Typhoid.	Erysipelas.	Puerperal Fever.	Diphtheria.	Scarlet Fever.	Totals.
1889....	0	147	219	1	84	409	860
1888....	21	266	255	8	67	132	749

The increase is more than accounted for by the prevalence of Scarlet Fever during the third quarter of the year, for, with the exception of Diphtheria, of which a few more cases were notified than in 1888, all the other diseases show a considerable decrease.

Small Pox.—Of Small Pox not a single case has been met with in the town during the whole twelve months, as against 21 during the previous year. It should, however, be borne in mind that Leicester has not enjoyed any exceptional immunity from this disease, as Small Pox has been conspicuous by its absence throughout the country at large, only seven deaths having occurred in the whole of the 28 large towns of the kingdom; and many other towns have, like ourselves, been absolutely free from the disorder. (See table of other towns). It is scarcely to be expected that this good fortune will continue uninterruptedly. The remarks made above relating to outbreaks of Scarlet Fever and Influenza apply with equal force to Small Pox.

Absence of Small Pox.

Epidemic waves appear to pass at intervals through countries and communities, the causes and the origin of which are at present veiled in considerable obscurity, and other factors than the simple one of personal contagion apparently operate or contribute to the wide spreading of many of the zymotic diseases.

Cases of Infectious Disease in the following Towns during 1889, from Jan. 1st to Dec. 31st.

Name of Town.	Population.	Small Pox.	Scarlet Fever.	Diphtheria.	Typhus Fever.	Typhoid Fever.	Puerperal Fever.	Erysipelas.
Bradford....	235,056	9	507	39	1	167	0	
Derby	98,529	0	757	45	0	93	5	
Huddersfield	92,825	0	354	40	0	50	2	
Leicester	**150,520**	**0**	**409**	**84**	**0**	**147**	**1**	**219**
Manchester	378,800	0	2018	476	5	431	16	
Nottingham	237,812	0	978	65	0	378	0	
Oldham	142,405	1	666	39	0	55	4	
Portsmouth	141,254	6	713	126	0	271	6	
Preston	104,194	0	180	71	0	270	1	
Salford	234,283	0	1208	621	7	487	9	

NOTE.—The above figures are compiled from the monthly returns published in the *Sanitary Record* during 1889.

Decrease of Typhoid Fever.

Typhoid Fever.—A satisfactory feature of this part of the Report is the diminished prevalence of Typhoid Fever, compared with the preceding year of 1888. Only 147 cases have been met with, and a large number of these were of a very mild character. As usual, towards the end of autumn some few cases arose, but these were in nowise to be characterised as "an outbreak."

The Infirmary and Typhoid Fever.

At the beginning of the year, a subject of some importance occupied the attention of the Sanitary Committee, in connection with this disease. Hitherto patients suffering from Typhoid have always been received for treatment in the Fever wards of the Leicester Infirmary. During 1888, however, the number of patients admitted from the Borough and from the adjacent districts was so large, that the Infirmary funds were seriously burdened by the extra expense they entailed, and the Governing Board applied to the Corporation, through the Sanitary Committee, as the health authority of the town, for monetary aid towards the expenses thus incurred. A similar request was made to the Board of Guardians, but in neither instance was it complied with, and the Infirmary Board, fearing the result of this continued demand upon their beds, at their annual meeting, in April, empowered the Weekly Board to require payment from Fever patients applying for admission. Happily, the subsidence of the disease, and the consequent lessened demand upon the Infirmary funds, has not necessitated this most undesirable rule being enforced.

Other Infectious Diseases.—Of the other zymotic diseases, a very few remarks will here suffice. (Full statistics relating to them will be found in Part III.)

Typhus Fever appears to be quite extinct in Leicester, though some of our large towns have not been without localized outbreaks during the past year. In the first quarter Measles prevailed to some extent, but since then scarcely any cases have been met with. Whooping Cough, too, has been much less prevalent than in many former years.

Of Puerperal Fever, only *one case* has been recorded, that, unfortunately, a fatal one. The few more cases of Diphtheria notified scarcely call for special comment, nothing approaching a localized outbreak of this dangerous disorder having occurred: in fact, a large proportion of these so-called Diphtheria cases were of a croupous character rather than true Diphtheria, and were met with chiefly in children. Ten deaths resulted, all of which were children under five years of age.

Uselessness of Notifying Erysipelas.

With regard to Erysipelas, of the 219 cases notified, not one-tenth were of sufficient importance to have any significance from a public health point of view. Five deaths resulted, and in most of these other and more severe disease co-existed. That Erysipelas should have been included in the new Notification Act passed by the Government is a matter of surprise to your Medical Officer, especially after the evidence which was submitted from Leicester upon this subject to the President of the Local Government Board.

This matter has been referred to at length in previous reports.

Increased amount of Diarrhœa.

Diarrhœa.—The past summer was much more favourable to diarrhœal ailments than the summer of 1888, and an increase in the mortality therefrom was experienced throughout the country, Leicester shewing a considerably increased mortality from it. 221 deaths occurred, against 148 in the preceding year; but this was a little below the average mortality of the last ten years. (See Statistics, part III.) Of these deaths, 190 were infants under one year of age, and of the remainder, only 18 occurred amongst persons over five years of age.

The increased prevalence was also shewn by the increased demand for diarrhœa mixture, which, as in former years, was distributed gratuitously to poor persons, by order of the Committee. This was supplied to 7763 patients, of whom 5655 were upwards of ten years of age, proving, as often shewn before in these reports, that the disorder is by no means, chiefly or principally, confined to young children, though the mortality is confined almost entirely to them.

The observations and investigations concerning the obscure problems connected with the causation of this disease, carried on by your Officer of Health during the preceding three years, were continued and extended during the past summer; and whilst not throwing much additional light upon the subject, have served to further confirm the conclusions arrived at, and

Weekly Deaths from Diarrhœa.

	1885.	1886.	1887.	1888.	1889.
Week ending					
June 20....	1	0	0	1	3
,, 27....	1	1	1	1	8
July 4....	6	1	3	0	17
,, 11....	10	2	20	1	24
,, 18....	25	9	32	5	28
,, 25....	35	8	45	2	23
August 1....	24	29	33	2	20
,, 8....	26	23	31	7	17
,, 15....	10	20	23	2	19
,, 22....	9	10	11	2	13
,, 29....	7	20	8	15	4
Sept. 5....	6	20	10	13	9
,, 12....	3	33	10	25	5
,, 19....	5	17	3	15	5
,, 26....	1	9	3	14	2
Oct. 3....	1	11	2	10	1
,, 10....	0	7	0	9	4
,, 17....	0	5	2	5	2
,, 24....	0	3	2	0	0
,, 31....	0	2	0	2	0

which were reported at length in last year's Report. It is scarcely necessary to repeat these in detail, but that the proximate cause is intimately connected with the temperature of the earth is shewn by the fact that in the year under review the temperature of the subsoil, at a depth of one foot, reached 61 deg. F. so early as the middle of June, and the prevalence of the disease occurred correspondingly early. The mortality therefrom had reached its maximum before August. From that time it rapidly declined; whilst in 1888 the mortality did not begin to be heavy until the middle of August, the earth temperature not having risen permanently until that time.

The figures for the past four years of the weekly mortality are given, and they show how very varying in time is the onset and maximum prevalence of the disease.

Dr. Ballard's Report.—It is well known to the members of the Sanitary Committee that some eight or nine years ago an enquiry was set on foot by the Local Government Board as to causes at work in Leicester, which apparently rendered it more prone to diarrhœal prevalence than any other English town. This enquiry was entrusted to Dr. Ballard, and his report, which has been awaited with some impatience, has at last been published, and appeared as a blue book of some 130 pages, in April last. Seeing that the enquiry was originally begun in the interests specially of our own town, it may not be out of place to give here the more important conclusions arrived at by him, though there is unfortunately but little to be found in the report which had not already been worked out by your own Health Officers. For the full details and statistics upon which Dr. Ballard bases his conclusions, reference must be made to the report itself, which is of a very voluminous character.

Dr. Ballard's Report to the Local Government Board upon the Causation of the Annual Mortality from "Diarrhœa," which is observed principally in the Summer Season of the year.

History of Inquiry.

This inquiry was commenced under the Board's instructions at the close of 1880, which had been a year of exceptionally high diarrhœal mortality generally in England and Wales. The death-rate from this cause had only once before been exceeded since the commencement of death registration in 1837, namely, in the year 1868. The high rate of 1880 was accentuated by the circumstance that during the preceding year 1879 the diarrhœal death-rate had been exceptionally small, smaller in fact than in any year since the earliest years of death registration. In London, however, the death-rate of 1880, although much higher than in 1879, had been exceeded in 20 out of the 43 years that had elapsed since 1837, and in many of these 20 years the 1880 death-rate had been greatly exceeded. These events, and some of the considerations thence arising, attracted public attention, and were the immediate occasion of an investigation being set on foot which had for several years been more or less in contemplation. Another point had especially attracted notice, namely, that certain towns, Leicester heading the list of them, had acquired notoriety as specially diarrhœal towns from the almost annual naming of them as such by the Registrar-General in his Quarterly and Annual Reports. Speculations as to the cause there were in abundance, and dogmatic assertions were not wanting, but it was felt that the subject was involved in a darkness which had not yet been pierced. Prior to my being charged with the inquiry, a circular letter had been issued by the Board to the health officers of places in which during the summer of 1880 the mortality had been in excess, requesting the views of these gentlemen as to the cause of the high diarrhœal mortality in their several districts. To this circular a number of replies were returned, many of them suggestive no doubt, but on the whole such as afforded to the Board no information that it did not already possess as representing current medical opinion on the subject in one or another of its phases.

Scope.

The form in which I received my first instructions was to inquire into the cause of the annually recurring high mortality from diarrhœa in Leicester; but it very soon became obvious that the diarrhœa of Leicester did not differ in its nature from that of other places, and that, to interpret it aright, the inquiry would have to be greatly widened and made to embrace not only towns and places resembling Leicester in their high diarrhœal rate, but towns and places differing from it in this very particular: and that investigation in this differential sense was requisite, not only in respect of death-rates, but also in respect of the circumstances of locality, character of population, and sanitary advantages or the reverse. Leicester, however carefully looked at, could not be interpreted by itself. The attempt had been made by local observers over and over again, but had failed of any satisfactory result. The scope of the inquiry then was extended, and although Leicester and its misfortune had still to occupy a notable place among the objects of the investigation, it no longer stood as its sole object, but had to rank, first indeed but still to rank, with other high diarrhœal places in England and Wales; for it came to be seen that the reason or reasons why Leicester *and other* places were thus pre-eminent was the actual subject-matter for inquiry. The task became in this way much greater than was originally anticipated; its difficulty was in one sense increased by its extension, and in another sense it was lessened, that sense being that it relieved me of much useless and unsatisfactory speculation upon points which could only be determined by the collection and comparison of facts. The inquiry has been prosecuted year by year (though amid manifold and often lengthy interruptions) from 1880 until the present time. I cannot and do not pretend to say that even now the ground has been dug into deeply enough to expose the truth in its entirety, but I hope it will be found that enough has been exposed for sanitary administrators to find some lessons of practical utility, and to indicate to investigators succeeding me directions in which they may best proceed to expose more of the truth. I cannot take too early an opportunity of saying that the sanitary authorities generally of the several towns and districts included in the inquiry at once afforded me the facilities I required, by supplying me with information such as I could not have otherwise obtained, by placing the services of their officers more or less at my disposal and in some instances by expending money to advance the objects of the inquiry. To many of the Medical Officers of Health and Surveyors of the towns I am under special obligations, not only for their ready co-operation in placing at my disposal stores of already prepared records, but for new labour of considerable amount voluntarily undertaken by them for the furtherance of my study of the subject. I may indeed say, that without such cordial and ample help as I received in this way the inquiry would have proved to be beyond my own ability. Further, during the earlier years of the inquiry I had the very valuable assistance of my colleague, Mr. Power, and throughout the inquiry I have had the advantage of his criticism and judgment in conference.

PROVISIONAL STATEMENT OF THE RESULTS OF THE INQUIRY AS TO CAUSATION.

Provisional statement of results.

As will appear in the progress of the report, the main practical question to be solved is the cause of diarrhœal mortality in children under five, and especially in infants under one year of age. It is the mortality at these ages which occasions the mountain of deaths from diarrhœa which has been generally observed in the summer season of the year, especially in Leicester and other of our large towns. The governing authority of Leicester, unaware of the breadth and logical difficulties of the inquiry, are naturally impatient to obtain the practical results of my eight years' work at the subject, and perhaps other local sanitary authorities, although more reticent of expressing their impatience, are similarly desirous of knowing them.

I may therefore, for their interim satisfaction, make the following brief statement as to the broad results of my inquiry, premising that what I am now about to say is *provisional only*, and must be clearly understood to be so. I hold myself at liberty in a future report to withdraw or qualify statements made under this heading, as my closer analysis of facts shall hereafter indicate.

The causes of infant diarrhœal mortality are multifarious, the influences bearing upon infants and the circumstances under which they are placed reacting on one another, now by an assisting, now by a repressing operation.

The following are a selection of the more important of those conditions which I find commonly regarded in the profession as influencing diarrhœal mortality,[*] or are shown by my own observations to be of importance:—

A.—General Conditions.

General conditions: Atmospheric Temperature.

1. *Atmospheric Temperature.*—That a high atmospheric temperature conduces to a high diarrhœal mortality, and a low atmospheric temperature to a low diarrhœal mortality, is an established fact which no one can dispute. But my inqniry shows that the influence thus exerted is *not a direct influence*, except in so far as it affects also infant mortality from all causes. It is not the main cause of the diarrhœal mortality. Its influence is very great, *but it is exerted indirectly.*

Earth Temperature.

2. *Temperature of the Earth.*[†]—This is a far more important condition. I have made for London and many other towns in the Kingdom a large number of charts [‡] showing week by week for many years the earth temperature at a depth of 1 foot from the surface and at a depth of 4 feet from the surface, each chart showing also the diarrhœal mortality of the corresponding weeks. The general result shown by these charts is as follows:—

a. The summer rise of diarrhœal mortality does not commence until the mean temperature recorded by the 4-foot earth thermometer has attained somewhere about 56° Fahr., no matter what may have been the temperature previously attained by the atmosphere or recorded by the 1-foot earth thermometer.

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[*] Diarrhœal mortality is the sum of two factors, namely, prevalence and fatality. Both of these differ in the same place in different periods of the same year.

[†] In assistance of this part of my inquiry, the sanitary authorities of Leicester and of some other towns have been good enough, when erecting, at my request, instruments for ordinary meteorological observations, to introduce earth thermometers also at their several stations.

[‡] I have introduced, by way of a single illustration, at the end of this report, a chart of the sort referred to. It is constructed from data forwarded me by Dr. Page, of Redditch. It does not indeed relate to mortality but to diarrhœal sickness (one of the factors of mortality) at Redditch in the year 1885.

(COMPARE THIS WITH MY REPORT, 1888.—H.T.)

b. The maximum diarrhœal mortality of the year is usually observed in the week in which the temperature recorded by the 4-foot earth thermometer attains its mean weekly maximum.

c. The decline of the diarrhœal mortality is in this connexion not less instructive, perhaps more so, than its rise. It coincides with the decline of the temperature recorded by the 4-foot earth thermometer, which temperature *declines* very much more slowly than the atmospheric temperature, or than that recorded by the 1-foot earth thermometer; so that the epidemic mortality may continue (although declining) long after the last-mentioned temperatures have fallen greatly, and may extend some way into the fourth quarter of the year.

d. I do not wish it to be inferred that the atmospheric temperature, and the temperature of the more superficial layers of the earth, exert no influence on diarrhœa. Their influence, however, is little, if at all, apparent until the temperature recorded by the 4-foot earth thermometer has risen as stated above. Then their influence is apparent, but it is a subsidiary one.

Rainfall.

3. *Rainfall* exerts an influence on diarrhœa, but (so far as is apparent at present) not equally in all periods of the diarrhœal season. The diarrhœal mortality is greater in comparatively dry seasons and less in wet seasons, especially if the drought on the one hand, and the rainfall on the other, be remarkably protracted and excessive. But here again the tendency of the inquiry has been to show that the influence exerted is not direct (*e.g.* by a washing of the atmosphere, so to speak), but indirect, namely, by its effect mainly in preventing the rise and (probably to a less extent) in hastening the fall of the temperature of the earth.

Air movement.

4. *Air Movement.—Wind and comparative Calm* affect the diarrhœal mortality. Other things being equal, calm in the diarrhœal season promotes it, and high winds tend to lessen it.

B.—Conditions of Locality.

Conditions of Locality: Elevation.

5. *Elevation above Sea Level.*—This has apparently an influence on diarrhœal mortality, but not a very remarkable or powerful one. It is an influence which, when we regard large areas, is lost sight of in the midst of much more powerful influences, and is not perhaps to be distinctly seen until we compare among themselves the different parts of comparatively small areas. In such areas we may often see that the lower levels are more affected than the higher levels; but even here it is not easy to estimate the extent of this influence on account of the disturbance of the result by other more potent influences. But even when most obvious, it has appeared to me that elevation is not an influence that bears specially upon diarrhœa; it affects also, and to much the

same extent, mortality from other causes. It seems, in short, to influence diarrhœal mortality only in so far as it affects infant mortality from all causes together.

Soil.

6. *Soil.*—I think I am in a position to say that the influence of soil is a decided one; and that, although it may be observed in respect of some other causes of mortality (and so is not altogether peculiar to diarrhœa), it is observable most distinctly in relation to that disease—

a. Where the dwelling-houses of a place have as their foundation *solid rock*, with little or no superincumbent loose material, the diarrhœal mortality is, notwithstanding many other unfavourable conditions and surroundings, low, and indeed may be almost altogether unnoticeable. Deep and wide and frequent fissuring of the rock in a town, or superficial alternations of rock with looser material, modify this immunity.

b. On the other hand, *a loose soil*, permeable more or less freely by water and by air, is a soil on which diarrhœal mortality is apt to be high. So far as I can see at present, of all natural soils, sand is the most diarrhœal, other things being equal, unless I class with it surface mould to a considerable depth. Gravel (a very indefinite term, which has a different meaning in different places) varies in its relation to diarrhœal mortality in proportion as the loose element of it, or the stony element and the size of the stones it contains, vary. The more gravel approaches to sand in its fineness, or to rock in its coarseness, its relation to diarrhœa appears to be greater or to be less. Dwellers on loose slabby rock, as commonly seen overlying solid rock, have more or less diarrhœa in proportion as the slabby material is in small pieces and mixed with looser earthy matter, or in larger blocks with little intervening earth. Clay soils, other things being equal, do not appear to be, in themselves, among those soils specially favourable to high diarrhœal mortality; when they have seemed to be so, the connection has appeared to me to be otherwise explicable. A soil which is a mixture of clay, sand, and stones (commonly called a "marl") is apparently favourable or unfavourable to diarrhœal mortality in proportion as it is loose and permeable on the one hand, or plastic on the other.

c. The presence of much *organic matter* in any soil renders it distinctly more favourable to high diarrhœal mortality than it otherwise would be. Such organic matter (organic fouling) however need not be specially of a fœcal or excremental nature to exert this influence. Hence diarrhœal mortality is apt to be high where dwellings are built upon made ground, the refuse of towns, or upon the site of market gardens; or where the earth beneath and about dwellings is polluted by neighbouring collections of liquid filth in cesspits, or where sewage has soaked into it from imperfect drains and sewers, or from the surface of the ground. It is the opportunities for the collection of organic filth in the fissures of certain kinds of rock that seem to impart to these rocks, where towns are built upon them, a diarrhœal character.

d. Moisture or dryness of a soil.—Excessive wetness and complete dryness of soil appear to be unfavourable to diarrhœa. A degree of moisture specially favourable is an amount of habitual dampness which is decided although not sufficient to preclude the free admission of air between the constituent physical elements of the soil. Such a degree of dampness occurs when in the diarrhœal season the subsoil water stands sufficiently near to the surface to maintain by capillary attraction the dampness brought about by previously greater nearness of the water to the surface; or when the soil, as in the case of marls, contains sufficient of the clayey element to imprison enough of the water saturating it at some time previously. It is scarcely necessary to add that the requisite degree of dampness may be produced, not only from a source below, but from a surface source: for instance, it may be the result of a previous flood, or of watery matter habitually soaking in from the surface about houses, or from leakages of such conduits as sewers and drains.

Density of Population.

7. *Density of Population.*—Aggregation favours, dispersion over area disfavours, diarrhœal mortality. There is nothing new in this: it is (together with the influence of temperature) the lesson annually repeated to us by the Registrar-General, who every year indicates the fact that the diarrhœal mortality of towns much exceeds that of non-oppidan parts of the country, and that the diarrhœal mortality of large towns, on the whole, exceeds that of small towns. The same general lesson is taught by the comparison in particular towns of different parts of the same town such as I have instituted in the course of this inquiry. But it is to be observed that the influence of aggregation of population is noticed also in respect of infant mortality from other causes; it is not limited to diarrhœal mortality, although it appears most marked in the case of diarrhœa. Moreover, it is to be kept in mind that the parts of towns most densely populated are customarily the parts where the inhabitants are of the lowest social grade, and where other conditions favourable to diarrhœa mortality are most abundantly operative. The influence of density of population on the prevalence of diarrhœa is commonly much less direct than in the case of such diseases as measles and scarlatina, although, as will be seen later on, the malady does on occasion spread from person to person.

Density of Buildings on Area.

8. *Density of Buildings (whether dwelling-houses or other) upon Area.*—This is a different thing from density of population upon area, as may be seen in almost every factory town, although, very commonly, the two conditions are

combined. My inquiry tends to show that in a town, crowding of buildings of whatever sort in such a way as to cover area more or less closely with buildings promotes diarrhœal mortality. This condition is seen in operation, for instance, most distinctly in parts of factory towns where buildings other than dwelling-houses occupy much of the space, and where, consequently, the density of resident population on the area is not so great as it would be if the same space were covered wholly with dwelling-houses. It is probable that this difference of density of buildings upon area is one of the circumstances which have to do with the difference of diarrhœal mortality between large and small towns.

Restricted Circulation of Air.

9. *Restriction of and impediments to the free circulation of air* promote diarrhœal mortality.

a. About dwellings.—One cause of restriction and impediment lies in the condition last mentioned; this is most obvious where small dwellings are shut in amongst large and tall buildings, as in many courts and narrow streets of factory towns. Such cause is also seen in operation where streets are built in such a direction or are so arranged (*e.g.*, like the mortar between bricks in a wall) as that they cannot be swept by the prevalent winds of the diarrhœal season; or where the space at the rear of houses in a street, or between neighbouring streets, similarly cannot be swept by currents of air, *e.g.*, when the space between the rears of houses is narrow, and the ends of such space are obstructed by the buildings of a cross street, or in any other way. Very long, narrow streets, especially under the above-mentioned circumstances, are apt to present an excessive diarrhœal mortality. Openly built towns, which from their surface configuration are so arranged that impediments to the circulation of air are comparatively trifling, have, as a rule, a less diarrhœal mortality than those in which impediments abound, other things being equal.

b. Within dwellings.—The dwellings in which the free passage of air through them is most effectually prevented are those which are built "back to back." Taking these, then, as criteria, it may suffice to say that the results of the Board's inquiry* into the mortality from diarrhœa and other causes in dwelling-houses of this sort are to the following effect, namely, that the absence of free domestic ventilation increases very greatly and very obviously the mortality from diarrhœa, and this very much more than it increases the mortality from all causes put together, more indeed than it does the mortality from the seven principal "zymotics" put together, and very much more than it affects the mortality from all causes except these seven "zymotics."

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*"Joint Report by Dr. Barry and Mr. P. Gordon Smith, on "Back-to-back Houses," p. 40.

Dirtiness and Fustiness.

10. *Domestic darkness and general dirtiness of dwellings* are conducive to diarrhœal mortality. Dirtiness with bad ventilation, constitutes the condition known as "fustiness." It is a commonplace condition in the crowded and poor parts of towns; and it is very much in the parts where these conditions prevail that the diarrhœal mortality is highest. But these conditions are so associated with other conditions conducive to the same result, that I cannot at the present time define the extent of the influence of this special cause apart from them. The fact, however, is notorious. I am satisfied from my own observations that, among the same class of people, the diarrhœal mortality is greater in proportion as general fustiness prevails in their dwellings. Darkness of dwellings is rarely associated with cleanliness or satisfactory ventilation. The influence of "fustiness" and its frequent concomitant darkness is, I think, more obvious in respect of diarrhœa than in respect of the mortality from other causes.

Sewer, &c., Emanations.

11. *Sewer or cesspool emanations*, especially in a concentrated form, and suddenly let loose, may occasion attacks of fatal diarrhœa; emanations of this sort, I think I have reason to believe, are of themselves capable of occasioning a diarrhœal epidemic even in a non-diarrhœal season of the year; and hence in a diarrhœal season such emanations may well be believed to have an influence on epidemic diarrhœal mortality. Unusual diarrhœal mortality may, however, from time to time be observable in localities where there are no sewers to emit foul air, and where there is no reason for believing that cesspool emanations have been previously unusual in amount or have gained access to dwellings with unusual readiness.

Ordinary air-fouling.

12. *Atmospheric fouling from mere Coal Smoke or from the Gaseous Emanations of Chemical Works or of Chemical Refuse* appear to be inoperative, at any rate in neighbourhoods habitually exposed to them, except in so far as such atmospheric fouling may lower the general standard of infant health.

Filthy accumulations.

13. *Filthy Accumulations of Domestic Refuse in Privies, Ashpits, Dust-bins, &c.*—Comprising, as these do, an abundance of decomposing organic material, animal and vegetable, such accumulations promote, wherever they exist, diarrhœal mortality; but especially they do so where free movement of air is impeded, and the atmospheric fouling due to them is consequently concentrated. Fixed receptacles of filth may remain dangerous, even when emptied, on account of the encrusted state of their walls.

Polluted drinking water.

14. *Undefined polluted conditions of Drinking Water* have from time to time appeared to give rise to epidemic diarrhœa, and this irrespective of the season of the year; but, so far as I have been able to ascertain, water pollution has little or nothing to do in the way of direct causation with the diarrhœal mortality that occurs annually in this country in the summer.

C. Conditions relating to the Population.

Conditions of Population: Social position.

15. *Social Position.*—It is notorious, and especially so among Medical Officers of Health, that the diarrhœal mortality of towns is very disproportionately distributed among the several social classes of the population, being comparatively small among families of the lower social grades. The more closely this general belief is looked into, the more confirmation it gains. Dr. Grimshaw's Tables, in his paper on "Class Mortality Statistics" (British Medical Journal, August 13, 1887), give statistical evidence in this direction; but a careful study of Dr. Grimshaw's figures indicates that this condition influences the mortality from all other causes even to a greater extent than it does diarrhœal mortality alone. But, although I have thought it desirable to advert to this consideration, it must not be forgotten how much this term "social position" involves, when we compare the well-to-do with the poorer classes of the community, and each with an intermediate class, both as respects the localities in which they severally dwell, and the circumstances under which they live.

Food.

16. *Food.*—Although there is, I think, ground for the popular notions which associate epidemic diarrhœa with the consumption of articles of diet, the almost equally common notion that such diarrhœa arises from indigestibility of food or from faulty digestion on the part of the consumer of it, is not, I am disposed to believe, so well founded: rather I am inclined to think of epidemic diarrhœa due to food as arising through some extraneous substance in the food, which substance is by itself an efficient cause of the malady.

a. As regards the influence of the *mode of feeding* of young infants, the incidence of diarrhœal mortality upon infants fed on the one hand exclusively on the breast, and on the other hand partially or entirely upon other kinds of food, is of special interest. The general conclusions arrived at by medical men who have studied the matter, and by Medical Officers of Health who have adduced statistics in support of their opinions thereon, are generally to the effect that infants fed from the breast are remarkably exempt from diarrhœa as compared with infants that have been fed otherwise: and that feeding from "the bottle" has been principally concerned in the fatal diarrhœa of infants. But my difficulty about accepting these conclusions in their entirety has hitherto been absence of data as to the proportion of healthy children fed in these different ways. In this difficulty Dr. Hope, the Assistant Medical Officer of Health for Liverpool, has come to my assistance, and has made some comparative statistical inquiries among infants in that city who were healthy, and among others who had died of diarrhœa in the summer season. And the general result of his inquiry, so far as I have at present worked upon his tables, is this: 1st. That infants fed solely from the breast are remarkably exempt from fatal diarrhœa even among the low class Irish, the degree of exemption being exactly the same among the Irish as among the English and other races in his city. 2nd. That infants fed in whatever way with artificial food to the exclusion of breast milk, are those which suffer most heavily from fatal diarrhœa. 3rd. That children fed partially at the breast, and partially with other kinds of food, suffer to a considerable extent from fatal diarrhœa, but very much less than those who are brought up altogether by hand. 4th. As respects the use of "the bottle," that it is decidedly more dangerous than artificial feeding without the use of the bottle.

b. It is to be inferred generally from observations which I have made that the circumstances of *food keeping*, of its exposure to telluric emanations (*e.g.*, in underground cellars), or to emanations from accumulations of domestic filth, &c. (*e.g.*, when kept in pantries, &c., to which such emanations have more or less free access), tends to render it liable to produce diarrhœa, especially where the storing place of food is dark, and is not exposed to currents of air.

Maternal neglect.

17. *Maternal neglect and carelessness in infant management.*—In estimating (apart from other considerations already mentioned) the influences of this element of causation, I adopt as a criterion the prevalence of fatal diarrhœa among infants who are illegitimate as compared with its prevalence among the legitimate. The collective experience of three places, Salford, Great Yarmouth, and Scarborough is for all practical purposes to this effect, viz:—1st. That the infants most liable to be neglected, namely, those which are illegitimate, suffer exceptionally from all causes of infant mortality, but from diarrhœal mortality rather more than from other causes of death. 2ndly. That in years of high epidemicity this greater tendency on the part of the illegitimate infants to suffer from diarrhœal mortality is lost sight of. 3rd. That in years of low epidemicity the tendency above mentioned is most obvious, *i.e.*, the presumably less potent or less abundant specific cause (in such years) operates fatally more easily on the illegitimate than on the better cared-for class of infants. 4th. In a highly epidemic year this class of infants seems to suffer earlier than the class better cared for.

Female occupation.

18. *Occupation of females from home.*—This, which has often been assigned by Medical Officers of Health and others as a fruitful cause of infantile fatal diarrhœa, resolves itself mainly into the question of maternal neglect, with the substitution more or less of artificial feeding for feeding at the breast,—matters which have been dealt with in preceding paragraphs.

Provisional hypothesis.

Having regard to the broad facts already indicated, and to others which have yet to be exhibited by me, a working hypothesis or provisional explanation that would best accord with the totality of the evidence in my possession bearing on the production of epidemic diarrhœa may be stated as follows:—

That the essential cause of diarrhœa resides ordinarily in the superficial layers of the earth, where it is intimately associated with the life processes of some micro-organism not yet detected, captured, or isolated.

That the vital manifestations of such organism are dependent among things, perhaps principally, upon conditions of season and on the presence of dead organic matter which is its pabulum.

That, on occasion, such micro-organism is capable of getting abroad from its primary habitat, the earth, and having become air-borne, obtains opportunity for fastening on non-living organic material, and of using such organic material both as nidus and as pabulum in undergoing various phases of its life history.

That in food, inside of as well as outside of the human body, such micro-organism finds, especially at certain seasons, nidus and pabulum convenient for its development, multiplication, or evolution.

That from food, as also from the contained organic matter of particular soils, such micro-organism can manufacture, by the chemical changes wrought therein through certain of its life processes, a substance which is a *virulent chemical poison*: and

That this chemical substance is, in the human body, the material cause of epidemic diarrhœa.

It will be observed that this provisional hypothesis is sufficiently elastic to include, as a common cause of diarrhœa, chemical products of bacterial life manufactured indifferently within or outside of the human body. Elasticity, to this extent, of a provisional hypothesis has been necessary for the reason that, in the present state of our knowledge, certain cases and groups of cases of diarrhœa, not distinguishable from epidemic summer diarrhœa, have now and again been found to possess the faculty of being directly communicable from person to person. The account of Dr. Bruce Low's experience at Helmsley in Yorkshire appended to this Report is illustrative of this class of cases.

It will be obvious that in the stools of such infective cases of diarrhœa the hypothetical organism causative of the malady may be looked for with good hope of success.

PROVISIONAL PRACTICAL SUGGESTIONS TO SANITARY AUTHORITIES.

Practical suggestions.

These are based upon the foregoing results of the inquiry as to causation, in so far as the "causes" above enumerated are such as a Local Authority has statutory power to deal with and to modify, or such as it may endeavour to get modified by appropriate advice.

Liquid and Solid Filth Removal.

1. The first object which a local authority desirous of lessening its diarrhœal mortality should have in view is to prevent the fouling of the soil with matters out of which the material of diarrhœa can be produced. This object is to be attained by providing *a*, for the constant removal of liquid filth and sewage by means of proper conduits (drains and sewers), proper in the sense that they shall even to their very inlets. be constructed or imbedded in such a manner that there can be no passage of the liquid material they are intended to convey away, outwards into the soil; *b*, for the daily removal of all filth (useless organic matters) of a nature not conveyable by drains, &c. No prolonged storage of such matter in ashpits, dust-bins, dung-pits, about pigsties, &c., should be allowed.

Domestic cleanliness.

2. The cleanliness of the interior of domestic premises should be sedulously looked to and maintained, for filth (organic matter which can be infected by the contagium) often lodges here as well as in storage receptacles purposely provided for it.

Dryness and Cleanliness of Soil.

3. The dryness and cleanliness of the soil in towns (and especially in the poorer parts of towns) should be further provided for by procuring the effectual sealing of the surface of the ground immediately about dwellings by means of uniform *impermeable* material (such as cement), from the surface of which all water that falls may, *with certainty*, be carried off into the sewers, and which shall further prevent free passage of air from and into the soil. The same applies to the surface of such places as cow-sheds, stables, pigsties, &c.

Lowering of ground water.

4. In places where the ground water rises at any time to within such a distance of the surface as to render the first few feet of the soil habitually damp by the authority to *lower it permanently* to such a point as shall prevent this *dampness* of the soil, and so ensure that the first few feet of earth shall be dry.

Preventing rise of ground air.

5. In places where the soil is already polluted by or contains organic matter (as is the case with all soils which are not absolutely hard and rocky), the whole surface of the earth beneath houses should be so effectually and uniformly sealed with impervious material, such as concrete, as to prevent any chance of emanations rising into them from the soil. This should be done even in the case of new houses, not only as a precaution against the rise of ground air which may by chance become infective hereafter, but because the earth of fields and of land which has been cultivated (*e.g.*, of the former sites of market gardens) is more or less loaded with organic debris. Hence also a common practice of not only leaving unremoved the sods from the interior of buildings in process of erection, but of adding to them the sods from the footings of the walls, should be prohibited.

Free Ventilation about and within dwellings.

6. Free atmospheric dilution of polluted air, to be brought about only by free movement of air among and within dwellings—which is what the term "free ventilation" means—is an effectual means of lessening the energy of a present contagium. Of this I am perfectly certain. There can be no question whatever that to attain this end, and to attain it with the greatest completeness, should be one grand object of a sanitary authority wishing to lessen its diarrhœal death rate. For attaining it in older parts of a town Parliament has given ample powers, under such Acts as the Artizans and Labourers Dwellings Acts, so far as the free ventilation about dwellings is concerned. For new dwellings it is in the power of the authority to prescribe the width of streets, the provision of free space about dwellings, and to regulate the laying out of new streets. So far as is practicable the line of new streets should be such as will permit the free traversing of them by the prevailing wind in the summer season of the year. In any case free movement of air should be secured at the back as well as in the front of every house; and in addition the line of houses in a street should be broken at frequent intervals by a cross street or open space, to permit also of the transverse passage of the wind. Domestic ventilation is provided for by the Public Health and Nuisances Removal Acts, which local sanitary authorities are not only empowered, but which it has now been made their duty to enforce. The erection of "back-to-back" houses should not be permitted.

Protection of food from infection.

7. I am not prepared to name any kind of food which may not become infected with the contagium of this malady. Care should be taken to protect food of all kinds from this infection, but special care should be taken for the protection of milk, the staple article of food of artificially fed infants. Milk may become infected at any time from that of its leaving the cow's udder to the time of its being used as food. Hence the necessity of guarding it from infection in the cow-shed, in the storing place of the dairyman, in the house of the retailer, and in the dwelling of the consumer. Over every one of these places a local sanitary authority now has control. This control should be exercised by taking care that the cow-sheds themselves are paved with uniform and impermeable material and kept constantly clean and airy, and that all manure and filth is removed daily from their neighbourhood; the most perfect models of such places being adopted as pattern. The conventional cleanliness is insufficient. Next, the dairy should be similarly protected from the rise of ground air and very freely ventilated indeed. No milk retailer should be registered who has not a proper place outside his dwelling in which to keep his milk, a place similarly perfectly clean, protected against ground air, and very freely ventilated. The practice often adopted in Leicester and some other towns of storing milk on the ground floor of a dwelling-house or in some underground cellar should be altogether discouraged. Lastly, there is the rule, not only applicable to the keeping of milk, but of food of all kinds, that the pantries of

houses should be properly constructed; certainly they should not be underground cellars or cellar "stair heads," as is commonly the case in Leicester, but be open to free ventilation, light, cool and dry, and protected against the rise of ground air. Local authorities cannot enforce this recommendation, but they may take measures to make the importance of the provision known generally through their district. As to the offering for sale of stale and over-ripe fruit or doubtfully wholesome meat, and as to the sanitary condition of bakehouses and other places where food is prepared and sold, the local authority has ample powers of control, and these powers they should exercise. They may usefully recommend that consumers should boil all milk on its receipt into their houses.

Due regulations of Sewers and Drains.

8. It may be observed that, except in one respect, I have made no reference to sewers and drains or to sewer and drain emanations as conveyors of the diarrhœa contagium. This is not because I am not perfectly aware that foul emanations from such conduits may occasion diarrhœal disease. Indeed I have, I think, solid grounds for believing that outbreaks of diarrhœa are sometimes thus occasioned, as well as by foul emanations from cesspools and other receptacles of decomposing organic filth. But the public mind is, I believe, fully aware of this danger, and nothing that I can say is likely to enhance the appreciation of it. Nor need I add that the abolition of improper receptacles of filth and the free flushing and ventilation of drains and sewers, with due provision against the entry of foul air from them into dwellings and work places, is a matter which a sanitary authority is bound to see to. I have preferred to dwell most upon such points of precaution as are less likely to receive attention.

Measures of general sanitation.

9. And lastly, I have to say that whatever may be the essential cause of the malady, everything that promotes general ill health in a population probably renders it more liable to attack, and certainly inclines the illness towards a fatal issue.

Applicable to Leicester.

Now there is not one of the above provisional inferences which it has been considered desirable that I should give expression to, and no one point of advice based upon them, with which the sanitary authority of Leicester is not specially concerned. To carry out the advice given will no doubt be a costly proceeding. With that I have nothing to do. Sanitary faults are and ever must be costly, costly in human life or costly in pecuniary expenditure. Leicester is no doubt at a disadvantage as to its site (a matter to which I shall have to allude in another part of my report), but the greater is the reason that this disadvantage should receive compensation by every means that the Corporation are empowered to adopt. They have already launched themselves upon the proper course, since during the few years past that I have had occasion to make acquaintance with the town and its sanitary government, great works have been accomplished and much that was greatly needed is still being done for its sanitation.

Epizootic Disease.—The Borough, during the year, has seen but little disease amongst those animals which are used as food for man. Thirty-five cases of Swine Fever were met with, and one case of Pleuro-Pneumonia in a cow, the animals in every instance being destroyed.

Patients sent to Paris.

Rabies.—Though not strictly coming within the year now under review, it may be permissible to allude briefly to a case of Rabies which has recently been met with. In the second week of the present year (1890), a dog suffering to all appearances from Rabies came into the Borough from Blaby, and on its way badly bit a little girl at Blaby and a boy at Aylestone: in both cases on the face, &c. Arrived in the town, it bit a man on the Welford Road badly upon the hand, and shortly after was killed. It was known also to have bitten at least one dog. As a post-mortem examination confirmed the diagnosis of Rabies, arrangements were made for at once sending all three patients to Paris, for treatment by M. Pasteur; and they were taken there by your Medical Officer of Health on the third day after being bitten. The medulla and upper part of the dog's spinal cord were also taken, and inoculations therefrom made upon rabbits, which succumbed from the disease produced, in less than a week. But further unimpeachable evidence as to the animal being rabid was forthcoming. The dog spoken of as having been bitten, was kept under strict observation and isolation, and on the 15th day it began to shew symptoms of Rabies, which rapidly developed, and proved fatal on the 17th day.

The man remained under treatment by M. Pasteur for a fortnight, but the two children were kept 25 days, an unusually long period, owing to the serious nature of the wounds. It is gratifying to know that up to this time (March 25, 1890), all three patients are in perfect health.

As a precautionary measure, Rabies having appeared in the Borough, the Sanitary Committee put a muzzling order in force for six weeks after the above event, which at least had the beneficial result of clearing the streets of a number of stray, uncared-for, and ill-conditioned dogs. No other case was met with.

Tuberculosis in Cattle.—Although doubtless here, as elsewhere, cattle suffering from Tuberculosis in its early stages have been dressed and used for human consumption, no case has been met with where the carcase was so diseased as to call for action on the part of the Veterinary Inspector, or the Inspector of Meat. Notice was received by telegraph, by your Medical Officer, that a tuberculous cow had been consigned by rail from a neighbouring town to the Leicester Cattle Market, but on close inquiry here it was found that the animal was not unloaded at Leicester, but sent on to the London market.

Transmission to man from animals.

The question of transmission of Tuberculosis from the lower animals to man, by means of our meat supplies, has rightly begun to assume a position of national importance, and legal proceedings have been taken during the year in several large towns, to prevent the carcases of animals known to have been suffering from this disease being sold in our meat markets; but at present there is no definite rule laid down to guide magistrates in their action.

Seeing that Tuberculosis in one form or other carries off about one-sixth of the human race, so possible a source of infection as our meat supplies should be rigidly guarded, and any case met with here will promptly be dealt with, as the law permits.

(Since the above was written, just as this Report was passing into the printers' hands, three live sheep in an advanced stage of Tuberculosis have been seized by the Inspector, and condemned both by Medical Officer of Health and Magistrate. The carcases were destroyed, but the prosecution which was instituted broke down on a technical point.)

Horseflesh as Food for Man.—Just at the close of the year, the first case hitherto discovered in Leicester of attempting to palm off horseflesh as beef was discovered. On the 31st December, the Meat Inspector having had his suspicions aroused with respect to the nature of some joints of meat at a butcher's shop in Wharf Street, seized the whole of it, to the amount of 400 lbs. After examination by the Veterinary Inspector and Medical Officer, no doubt remained that the carcase of a horse had been cut up into joints, and placed amongst others of real beef, with a view to dispose of it as being the latter. The meat was perfectly healthy and good, and apparently from a young animal, so that there was no danger threatened to the public health. During the last session in Parliament, a Bill specially dealing with the sale of horseflesh became law, which makes it an offence to expose or have for sale horseflesh for human food, unless a distinct and legible notice to this effect be exposed to the public view. Proceedings were instituted under this Act, and a conviction obtained, with a fine of £3 and costs. The defendant, however, absconded before the hearing of the case. The Justices intimated their intention of dealing severely, in the future, with any offenders who might be brought before them, and found guilty of infringing this law.

First case met with in Leicester.

New Sewerage Works, Flood Works, &c.—The extensive operations in connection with the new drainage scheme and flood prevention works, designed by the late Borough Surveyor, Mr. Gordon, have made good progress during the past year. By his untimely death, in November last, almost immediately after leaving Leicester to take up the responsible position of engineer to the London County Council, Mr. Gordon was prevented seeing the completion of these schemes, to which he had given so much time and thought. The work is now being carried on under the direction of our new Surveyor, Mr. Mawbey, by whom the following particulars were kindly supplied :—

New Main Sewers.—The construction of the new main sewers has made considerable progress during the past twelve months. The section of the work along Belgrave Gate, Progress of New Drainage Works.

from Syston Street to the Clock Tower, and from Pasture Lane Bridge along Lower Church Gate, Church Gate, Gallowtree Gate, and Granby Street, with branches in Friday Street, Heanor Street, Archdeacon Lane, and Bedford Street, is completed, and consists of 4640 lineal yards or 2·63 miles of brick sewers, varying in size from 7ft. 3in. by 6ft. 3in. to 3ft. by 2ft. The main outfall sewer along the Belgrave Road, from Syston Street to the Melton turn, across the Round House Meadow and under the canal and river to the new Pumping Station. is very nearly completed, and consists of a 7ft. 3in. by 6ft. 3in. sewer along the Belgrave Road, a 6ft. 9in. by 4ft. 6in. sewer across the Round House Meadow, and a 5ft. cast iron pipe, surrounded with cement concrete, under the canal and river to the Pumping Station.

The other works in connection with the new drainage scheme and sewage farm have made considerable progress. The superstructure of the new engine house is nearly completed, and Messrs. Gimson & Co. have commenced to erect the engines. The laying of the rising mains, to convey the sewage from the Pumping Station to the farm, is finished, and the tanks, main carriers, culverts, and roads upon the farm, comprising Mr. Law's contract, are nearly completed.

The accompanying table is in continuation of similar details given in former years :—

Sewer Construction, Cleansing, &c., during 1889, and since 1881.

	Length in yards of new Foul Sewers.	Length in yards of new Storm Sewers.	Length of old Sewers [in yards] opened up and cleansed, and provided with inspection shafts.
During 1889	*386	*265	630
From 1881 to 1888..	26,638	30,234	33,513
Totals....	27,024	30,499	34,143

* Exclusive of New Main Drainage Works, as per Mr. Gordon's scheme.

Flood Works.—The new Canal Channel, from Freemen's Meadow Lock to Old Castle Weir, has been completed, and the water diverted through the new channel. The improved River Channel, from Braunstone Gate to its junction with the new Canal Channel, opposite St. Mary's Road, has also been completed, and the site of the Bathing Station at the junction has been prepared, ready for the erection of bathing boxes, &c. The foundations for new bridges at Walnut Street and Mill Lane have been constructed, and the contracts have been let for the superstructures. The improvement of the canal between Castle Weir and West Bridge is now (February, 1890) in progress, and will be completed in about three months; so that the large and important works for the prevention of floods are drawing nigh completion.

Approaching completion of Flood Works.

When all these works of drainage and flood prevention shall have come into operation, it is not too much to hope that the sanitary condition and general health of the inhabitants of Leicester will be still further improved and benefited.

Water Supply.—The need for additional water supply to the town has been for some time past under consideration, and definite steps have been taken during the year for meeting this. A scheme is now well on foot for constructing a new additional reservoir at Swithland, capable of holding 500,000,000 gallons, and yielding a supply of 2,000,000 gallons daily. Our present supply is equal to 4,000,000 gallons a day. The consumption per head of the population is 18 gallons daily. The new scheme will entail a total expenditure of nearly a quarter of a million (£248,000). The Bill authorizing these works, &c., is now making good progress through Parliament.

Baths.—The old Baths in Bath Lane have been as much or more used during the past year as in any previous one. When the new ones in Humberstone Gate shall be completed, which it is expected will be some time during the present year

New Baths in Humberstone Gate.

(1890), it is only to be expected that the number of bathers using the old and less conveniently situated Baths will shew a falling off; though it is not to be doubted that the increased facilities afforded by the additional accommodation in the new Baths will result in an increased demand.

The cost of the new erection, which was stated in last year's Report to be estimated at about £6000, will, it is found, exceed the amount by at least two or three thousand pounds; the architect's estimate having been considerably too low, though increased prices for materials and additions to the original plan have helped to swell the amount.

The returns for the year of bathers and receipts therefrom, at Bath Lane, are as follows:—

	£	s.	d.
50,808 persons to penny Swimming Bath yielded ..	211	14	0
19,408 first-class Men's ditto	317	1	8
1,661 Ladies' Swimming Bath	27	6	7
16,960 persons to Slipper Baths	400	6	1
Books of Tickets..............................	63	9	6
Use of Bathing Drawers, &c.	21	1	10
	£1040	19	8

The total receipts from the Baths yielded last year a profit of more than £200 on the ordinary working expenses, exclusive of sinking fund and interest on capital.

Dwellings of Poor, Model Lodging Houses, &c.—For more than two years the necessity or otherwise for taking Corporate action in providing within the Borough either Artizans' Dwellings or the more humble Model Lodging Houses, has occupied the attention of the Committee and of the Council itself, but up to the present time matters remain *in statu quo*.

Detailed facts and statements bearing upon these subjects have appeared in the Health Reports of the three or four previous years. The condition of things there related is much the same to-day as then, and beyond reiterating the statement that the conditions found in a considerable number of the smaller cottages of the poor, in the older parts of the Borough, and in the large majority of the lodging houses, is such as to reflect no credit upon us as a community, but little will now be said. It may be alleged, and possibly truly, that we are not so bad as many other towns of a similar size; but it will be a good day for the town generally, as well as for those who are unfortunately compelled from any circumstances whatever to use these places, when they disappear, and are replaced by something better. At present, however, the opinion of a large proportion of the members of the Council is, that there are no such urgent conditions as to justify them in following in the wake of Liverpool, Glasgow, Dublin, and some other towns, in providing artizan dwellings even on a small or experimental scale.

No action yet taken by Corporation.

In November last, however, the Council decided with no uncertain voice that no more courts and alleys and confined yards should be allowed to grow up in the town; but that to every court or yard in which it should be proposed to erect dwellings there should be ample ground space, air space, and free, wide, and open access. The exact wording of the Resolution adopted by the Council, and which, subject to the consent of the Local Government Board, will take the place of certain clauses in the Leicester Improvement Act of 1868 and 1881, is as follows:—

Improved Bye-Laws for Courts, &c.

"Every court in which any dwelling house shall be built (if such dwelling house do not abut on a street) shall be of not less width at all points than as follows, that is to say:—

> "Thirty feet if the court have buildings erected on both sides thereof, and twenty feet if the court have buildings erected on only one side thereof, where on the other side thereof there is the open space at the rear of

> other houses, and thirty-five feet where there is not any such open space on the other side of the court, or where factories or other buildings used as business premises are erected in or abut upon any such court.

"And every such open space shall be free from all erections thereon, and the entrance or passage into the said court shall for the whole length of such entrance or passage be not less than thirty feet wide, and open to the sky, and every dwelling house erected in a court shall have at the rear thereof, for the whole width of the front of such house, an open space free from all erections thereon, of not less than fifteen feet in depth, measured at right angles to the width from the rearmost wall of the house."

One can only regret that such bye-laws were not in force five and twenty years ago or more, and thus have prevented many of the unsatisfactory conditions of the homes of the poor, now so difficult to remedy.

Lodging House question in abeyance.

As to the question of providing Model Lodging Houses, this has been discussed at length and voted upon twice by the Council: on the first occasion the proposal was negatived by a majority of one; on the second (in April last), by a majority also of one, it was declared to be advisable that the Corporation should undertake the erection and control of a Model Lodging House. Since that time, however, no further steps have been taken, the Sanitary Committee, with whom the matter rested, scarcely feeling justified in proceeding with the project in the face of the strong opposition encountered in the Council, and with such a bare majority in its favour. Another fact that has probably had an influence in staying their action was the erection by a private individual of a large new Lodging House in Britannia Street, for 46 men, with much superior accommodation and arrangements to those in the wretched houses now existing. This building, although nothing like so complete or good as the one proposed to be erected by the Corporation would have been, answers its purpose satisfactorily enough. No provision is, however, made here for the reception of women, children, or married couples.

Increased air space enforced.

One practical step taken by the Committee, on the advice of the Officer of Health, during the year, to minimize the evils complained of, was to increase the cubic space required as a minimum for each lodger from 250 to 300 cubic feet per head, an amount which does not err on the side of extravagance, considering the nature of the houses and the character and habits of their occupants. In various parts of the country, and notably in the Metropolis, this question of the housing of the poor, and the provision of better dwellings, has come to the front. In December Mr. Ritchie, President of the Local Government Board, issued a circular to all sanitary authorities in the country, pointing out the powers they possessed under various Acts of Parliament to deal with this subject, and urgently impressing upon them the grave responsibility of neglecting to put in force such powers when the necessity for action exists.

Bake-houses, Slaughter-houses, Cow-sheds, Dairies, Factories, &c.—All the buildings and places under the above definitions, together with others coming under the supervision and control of the Local Sanitary Authority, have been regularly and systematically watched and inspected, to insure as far as may be that the work and operations carried on therein are conducted in a manner consistent with cleanliness and sanitary requirements, and but little trouble has been met with in this branch of the Health Department's work.

Objection to private slaughter houses.

To reiterate what has been referred to at length in former years, respecting the unavoidable nuisance connected with the presence of Slaughter-houses in the midst of thickly-populated districts of the town, would be wearisome. All that a strict watch and supervision can do to minimize the evil is done, but nothing short of their total abolition, and the removal of all slaughtering work to the public abattoirs, can in any way go to the root of the evil. This question of private Slaughter-houses in the midst of large cities is slowly ripening. So many other large towns are feeling the nuisance and evils of their perpetuation, from a social as well as from a sanitary point of view, that the hope may once again be expressed that ere long some way may be found for dealing in a radical manner with the question, upon broad and general grounds.

Cows and Tuberculosis.

It will probably ere long be found desirable to overhaul and amend the existing regulations respecting the keeping of cows within the Borough. Under various Acts of Parliament, local authorities now have very extensive powers for regulating and controlling all places and buildings in which are housed milking cows. These animals unfortunately, like ourselves, are very prone to develope Tuberculosis, and it is not to be doubted that a milk supply from an animal suffering from this disease may easily be the means of transmitting it to those who consume such milk. Overcrowding, insufficient air-space, light, and ventilation, are the conditions which tend to induce Tuberculosis in cows, as in man; it is therefore of the first importance that places where they are kept should be properly lighted, ventilated, cleansed, drained, &c., and that the animals should not be overcrowded in their sheds. In many of the cow-sheds of the Borough the premises are undoubtedly too confined and too near to human dwellings, with very bad means of access, &c.

Provision of Refuse Destructor.

Disposal of Ashes, and Town Refuse, &c.—During the year the Sanitary Committee have had prominently before them the need for some immediate action for disposing of the ashes, garbage, and other dry refuse of the town. The population is rapidly increasing, and the "tips" hitherto used are fast becoming filled and used up. Under these circumstances it was felt to be desirable to ascertain what was being done in other parts of the Kingdom to meet this difficulty. Several towns were visited by a Sub-Committee appointed for the purpose, and after their report it was unanimously agreed to recommend to the Council that a "destructor" be provided. This expenditure was sanctioned by the Council and the work at once taken in hand. A site has been secured near Charnwood

Street, plans got out, and tenders accepted for the work of erection. It is believed by the Committee that the operations carried on there will cause neither nuisance nor annoyance to the immediate residents, and it is expected that the products of the operations will form a source of income, which will go towards reducing the working expenses.

Should this first one fulfil the anticipation of the Committee, additional ones will doubtless be erected to meet the wants of other parts of the town.

Ash-pits versus Ash-pails.

In the Public Health Section of the British Medical Association held this year, at Leeds, this question of the disposal of town refuse was under long discussion, and the unanimous opinion of the members was that abolition of all large pits, &c., for the storage of ashes and general house refuse was desirable, and in their place small movable receptacles to be provided, the contents to be emptied and removed every few days by the local scavenging authority, and dealt with by cremation. Leicester is at present endeavouring to carry out its house scavenging upon these lines.

An erroneous notion has at times got abroad that excremental matters will be disposed of at these destructors. This is not so, the only two methods in the Borough for the disposal of this are the sewers, by means of water closets, and that commonly known as the "pail system." At the present time nearly 7,000 pails are in use. Few persons, however, who have had practical experience in the actual working of this system, but have come to the conclusion that it is more or less of a failure, as seen in every day operation in our large towns, and many towns who have partially adopted it, are now hesitating about extending or continuing it. In Leicester, from time to time, complaints are received from those who have to put up with this system.

It is not to be denied that this method is an immeasurable gain upon the old midden system, with its huge cesspits, contaminating both air and soil, but the pail system when applied in crowded and confined districts, the closets often within a few feet of the doors and windows of the houses, becomes, especially in the hot weather, when rapid decomposition of urine, &c., takes place, an unmitigated nuisance. Then again, the collection of the pails and their conveyance to the depôts is and must be attended with much annoyance, if not actual nuisance; and then when all this is accomplished, there remains the difficulty of rapidly getting rid of it, and finding land for its disposal. That these thousands of pails during the hot months of the summer are no mean factors in contaminating and polluting the air, in the immediate neighbourhood of dwelling-houses, cannot be gainsaid, and without pure air, health cannot be expected. As said by Lord Beaconsfleld, "the condition of the air we breathe has more to do with human happiness than all the accidents of fortune and all the arts of Government." Hence the importance of abolishing anything which will tend to vitiate and defile the air around our dwellings. Each year's experience only goes to shew that in a town provided with a good and efficient system of sewers, by which the excreta of the population can be rapidly and with cleanliness removed at once from its midst, the partial adoption of the pail system has but little to recommend it.

Objections to pail system of Closets.

Practically, it would make little or no difference in Leicester, either in the work or in the cost of the treatment of the sewage at the outfall works, if the whole of the matter now removed by pails were removed by the sewers: the gain in cleanliness would be immense. The best policy for the future will be the gradual displacement of all pail closets in close proximity to houses, and the substitution of water closets in their stead. It is satisfactory to know that very few additional pail closets are now being established, and that nearly all the newer and more recent cottage property has water closet accommodation provided, to the great satisfaction of the tenants.

Sanitary Legislation in 1889.—A few Acts of Parliament, bearing more or less upon the health of the community, have been added to the statute book. The most important was the Local Government Act for Scotland, which does for Scotland what a similar Act did for England and Wales in the preceding year. It contains one important provision not found in the latter. It makes compulsory instead of optional the appointment of a Medical Officer of Health by each of the County Councils. A small measure, the Public Health Act, 1889, gives additional powers to the Local Government Board for preventing the spread of Cholera, should it any time visit our shores again. The Poor Law Amendment Act enables the Metropolitan Asylum Boards to extend the use of their Fever Hospitals for the reception of persons other than paupers ; but the most important Act passed, as affecting Sanitary Authorities, was the Infectious Notification Diseases Act already alluded to. This extends to London and the country generally provisions which have been in force at Leicester and other places for many years. The Cotton Cloth Factories Act, although only applying to a small section of the community, is nevertheless of considerable importance to workers in textile weaving factories. It has long been known that the health of these workpeople suffered from the excessive humidity, &c., of these factories, and the new Act provides remedies to safeguard the health of the operatives. The small Act to prevent the surreptitious sale of horseflesh has already been mentioned. This measure has nothing to do with the wholesomeness or unwholesomeness of the flesh, but, like the Margarine Act, simply provides that the stuff shall be sold for what it really is, and not under a false or deceptive title. The Prevention of Cruelty to and Protection of Children Act, 52 and 53 Vic., c. 44, makes the gross neglect of little children an offence more easily punishable than heretofore, and takes much care of their physical and moral welfare up to 12 and 13 years of age, and considerably interferes with what has possibly hitherto been considered by some fathers and mothers as parental rights over their unhappy offspring.

Act of 1889 affecting Public Health.

A Retrospect of the Vital Statistics of Leicester during the last 30 Years.

The following Retrospect of the Mortality Returns, &c., of the Borough, during the last 30 years, will be of interest to all those who have the sanitary advancement and welfare of the town at heart. The three accompanying tables, giving the chief vital statistics during the past 30 years, have been drawn up at no inconsiderable trouble, and have involved the expenditure of much labour and time, owing to the fact that in the past records of the health of Leicester very much disparity is met with as to the true population returns, gross mortality, and mortality from different causes. In some years the number of deaths has been corrected for persons dying in Leicester not belonging to the town, and in others it has not. In the same way, in some years the deaths from Small Pox and Scarlet Fever have been corrected by the addition of those belonging to the town, but dying outside the Borough boundaries; in others they have not. Whilst the estimated populations for the years between the two census periods, 1871-1881, were so erroneous that the whole of these have had to be re-calculated.

Of course it is possible that the estimates of population given for the years 1882 to 1889 may be found, after the taking of the next census, to be somewhat inaccurate, as they are probably over-estimated, but with this exception the figures given in the accompanying Tables A, B, and C, may be looked upon as accurate as can be obtained.

TABLE A.

Year.	Population.	Births.	Deaths.	Annual Death Rate.	DEATHS FROM										Deaths under 1 year.
					Small Pox.	Scarlet Fever.	Enteric Fever.	Measles.	Whooping Cough.	Diphtheria.	Total Zymotics.	Diarrhœa.	Phthisis.	Cancer.	
1860	67,496	2530	1418	22·4	2	2	11	6	7	2	116	56	176	?	450
1861	68,056	2600	1785	26·2	1	1	61	124	41	4	414	160	201	?	530
1862	68,797	2765	1720	25·0	0	14	49	6	44	2	268	99	216	?	532
1863	72,130	3015	2199	30·9	5	236	51	91	31	7	637	170	225	?	621
1864	78,337	3115	2047	26·1	104	47	37	3	38	2	457	180	203	?	661
1865	80,500	3226	1965	24·4	10	8	56	86	20	3	441	226	232	?	674
1866	83,750	3412	1895	22·6	3	9	53	13	46	3	296	147	220	31	700
1867	88,500	3500	2005	23·3	2	40	42	2	62	0	395	209	240	?	792
1868	90,000	3589	2445	27·1	1	9	63	249	6	10	724	349	244	30	921
1869	91,500	3760	2299	25·1	0	8	49	43	70	9	512	272	254	26	862
Annual average for ten years 1860 to 1869.	78,997	3151	1983	25·1	12·8	37·4	47·2	62·4	36·5	4·2	426	186	221		674 Or 213 of every 1000 births.

TABLE B.

Year.	Population.	Births.	Deaths.	Annual Death Rate.	DEATHS FROM										Deaths under 1 year.
					Small Pox.	Scarlet Fever.	Enteric Fever.	Measles.	Whooping Cough.	Diphtheria.	Total Zymotics.	Diarrhœa.	Phthisis.	Cancer.	
1870	92,750	3800	2539	27·3	0	263	52	42	56	11	700	240	255	34	894
1871	95,884	3819	2498	26·1	12	112	57	35	32	7	607	303	265	38	964
1872	98,607	4154	2648	26·8	314	5	62	36	51	2	812	305	257	36	961
1873	101,330	4452	2401	23·7	2	6	55	62	64	9	551	314	232	36	928
1874	104,053	4375	2520	24·2	0	18	44	24	43	8	399	257	210	47	964
1875	106,776	4260	2889	27·0	0	175	58	49	91	7	694	308	243	47	945
1876	109,499	4781	2558	23·3	0	173	40	50	33	10	572	263	229	41	956
1877	112,222	4753	2515	22·4	5	33	20	40	65	9	358	185	229	37	897
1878	114,945	4779	2500	21·7	1	12	31	45	82	5	507	302	226	32	981
1879	117,668	4687	2651	22·5	0	105	21	72	61	11	376	88	205	40	878
Annual average for ten years 1870 to 1879.	105·343	4386	2572	24·3	33·4	90·2	44·0	45·5	56.8	7·9	557	246	235	38·8	936 Or 213 of every 1000 births.

TABLE C.

Year.	Population.	Births.	Deaths.	Annual Death Rate.	DEATHS FROM Small Pox.	Scarlet Fever.	Enteric Fever.	Measles.	Whooping Cough.	Diphtheria.	Total Zymotics.	Diarrhœa.	Phthisis.	Cancer.	Deaths under 1 year.
1880	120,391	4860	2960	24·6	0	119	46	166	27	23	848	398	214	56	1070
1881	123,120	4711	2654	21·5	2	184	29	7	122	11	567	193	205	36	965
1882	126,275	4855	2530	20·0	5	72	19	74	19	5	429	214	217	44	942
1883	129,483	4787	2484	19·2	3	91	10	15	59	6	377	148	211	61	913
1884	132,773	4851	2937	22·1	0	63	16	57	66	11	621	344	232	45	1133
1885	136,147	4682	2641	19·3	0	113	36	52	52	14	518	186	197	63	907
1886	139,606	4858	2738	19·6	0	44	19	43	27	4	420	256	190	63	1052
1887	143,153	4689	2722	19·0	0	5	31	87	55	13	462	247	191	80	1011
1888	146,790	4787	2640	17·9	0	4	32	77	86	13	388	148	168	66	980
1889	150,520	4789	2513	16·7	0	6	22	62	26	10	372	221	178	78	1004
Annual average for ten years 1880 to 1889.	134,336	4786	2681	19·2	1·0	70·1	26·0	54·0	53·9	11·0	500	235	200	59·2	1007 Or 210 of every 1000 births.

Taking a broad general view of these tables, the first thing that strikes one is the decline which has taken place in the death-rate during the last 30 years, but more especially in the last 10 years.

During the period 1860-69, the death-rate was 25·1 per 1000 per annum, rising to as high as 30·9 in the year 1863, and never falling below 22·4 per 1000.

In the next decade, 1870-79, the death-rate was 24·3 per 1000, rising so high as 27·3 per 1000 in 1870, and reaching its lowest point in 1878, with 21·7 per 1000 per annum.

In the last period, from 1880 to 1889, the mortality has fallen to 19·2 per 1000. In 1880 the death-rate was 24·6, this high mortality being caused by an unusual number of deaths from Measles, Scarlet Fever, and Diarrhœa; but since that time it has steadily fallen, until last year it reached the unprecedently low figure of 16·7 per 1000, placing Leicester only third from the top among the great towns of the kingdom.

In no year since 1884 has the death-rate in the Borough risen to 20 per 1000. Surely this is a tangible fact, of which the town may well be proud. It means the saving of an enormous number of lives every year, which, had the conditions remained the same as in the earlier years, would have been swept away.

Briefly glancing a little more in detail at a few of the many interesting points brought out in these tables, one notices, among other things, how the number of births has fallen off, compared with the increase in the population. In the first decade the birth-rate was 39·8 per 1000 (3151 births annually in a population of 78,997), in the second decade it was 41·6 (4386 births in a population of 105,343); but during the last decade it has fallen to 35·6 (4786 in a population of 134,336). During the past three years it has reached a lower point still. (See further remarks on this subject in Part III.)

Probably the most gratifying feature brought out in these returns is the evidence of the greatly diminished number of deaths from the zymotic group of disease. It is this group by which a health authority can most fairly and directly judge of the results of its labours. In the decade ending 1869, the average number of deaths from all the zymotic disorders was 420 per annum; during the decade ending 1889 it averaged only 500 *in a population nearly double* that existing in the former period; whilst during the last four years the number has been only slightly over 400 per annum.

Upon further analyzing these zymotic deaths, still greater prominence may be given to a few other facts connected therewith. Thus it is seen that in the first decade Small Pox caused 128 deaths, or an average of 12 per year; but of these 104 occurred in the year 1864 (prior to that date 1858 was the year when Small Pox mortality was high); in the second period 334 deaths were recorded, or a yearly average of 33, of which 314 occurred in the year 1872; during the last period only 10 deaths took place, or a yearly average of 1, and there has been no death from this disease since 1883.

Turning to Scarlet Fever, we find that in the ten years, 1860-69, there were 374 fatal cases, in the second decade 334, and in the ten years just completed 701. But it should be noted that during the three consecutive years, 1887-8-9, only 15 were caused by this disease. Whether the extra vigilance and precautions now in force to isolate and prevent the spread of this disease, with an increase of which we have been threatened during the past few months, will be successful in preventing any widespread prevalence, remains to be seen.

Looking back during these 30 years, one cannot but be struck with the ebb and flow which this disease manifests every two or three years. Exception to this should perhaps be made in the period 1879 to 1886, when it appears never to have been absent in epidemic form.

One of the most satisfactory features brought out in this retrospect is the greatly diminished prevalence of Typhoid Fever in the Borough. Thus, in the first ten years the average mortality, in a population of 78,997, was 47 per year; in the next period the yearly deaths averaged 44, in a population of 105,343; whilst in the last decade the annual average of deaths from this disease is only 26, or a reduction of more than 100 per cent. on the earlier period, taking into consideration the increase of population. With respect to the two diseases, Measles and Whooping Cough, essentially children's diseases, although they shew a little decline, the lessening of these has not been great, and in truth over these diseases a health authority, at present, has but little control or influence.

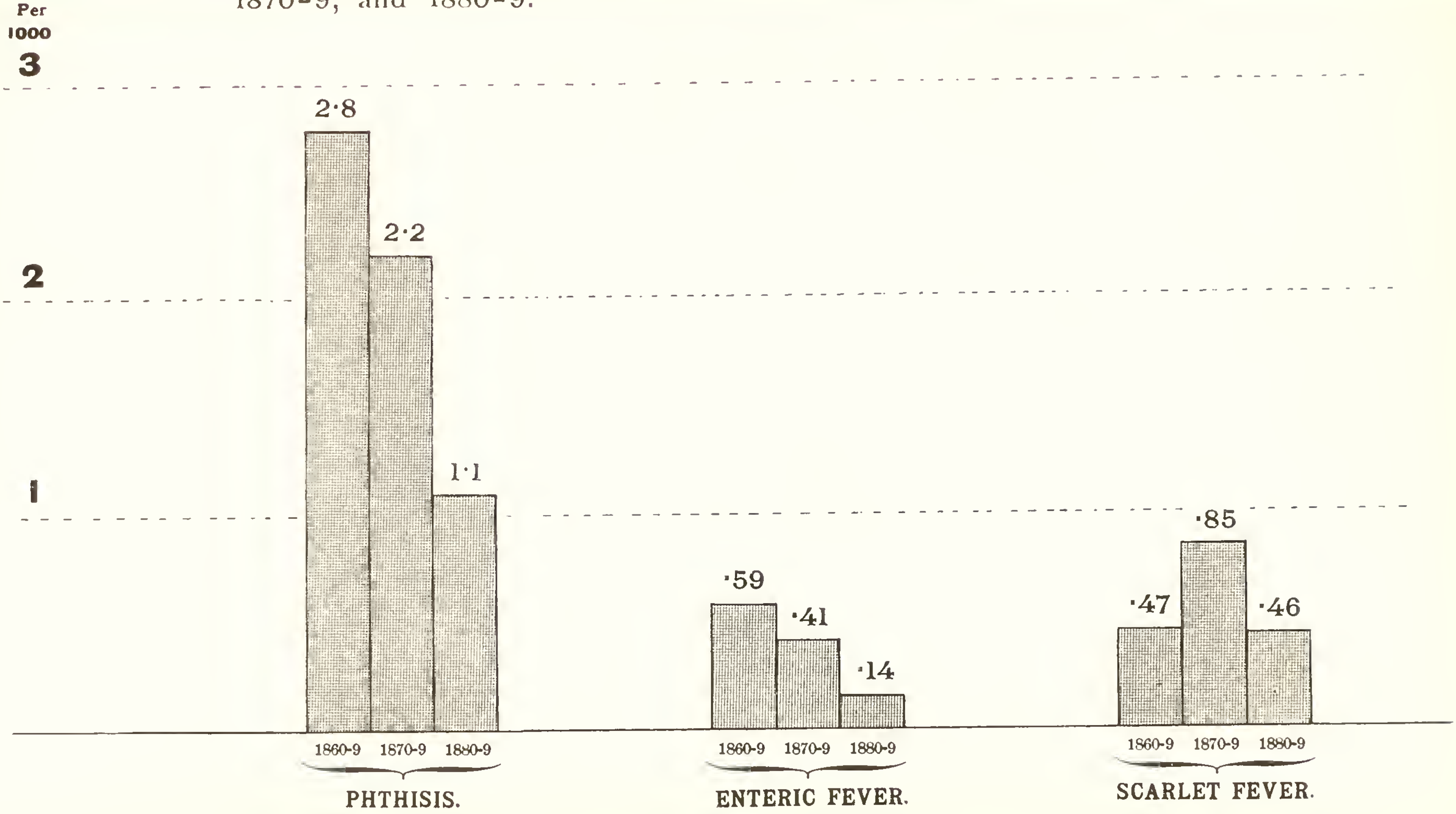
The returns of Diarrhœal mortality, when compared the one decade with the other, also afford ground for hope that the Borough may be improving its condition even as regards this disease. Thus, in the first ten years, the average annual mortality was 186, in the second decade it was 246, whilst during the last period, when the population has become much greater, the average annual number is 235 only.

It is considerable satisfaction to find that the mortality from Phthisis (one of the scourges of our large populations) is considerably on the decline. Thus in 1860-69 the yearly deaths averaged 221, in the second decade 235, and in the third decade, with a population nearly double that of the first, it is only 200 per annum. During each of the last five years it has fallen below this average of 200.

Perhaps the least satisfactory column in these Tables is that referring to infantile deaths. The deaths of infants under one year of age in Leicester shew but little diminution, during the 30 years now being reviewed. In the first decade they were equal to 213 in every 1000 born, in the second decade the rate was the same, whilst in the third decade it had fallen to only 210 in every 1000 births.

In the accompanying Plate is shewn, in diagramatic form, the death-rates per 1000 from Scarlet Fever, Typhoid Fever, and Phthisis.

DIAGRAM. Showing the Annual Average Death Rate per 1000 living in Leicester, for Phthisis, Typhoid and Scarlet Fever, during the three decades—1860-9, 1870-9, and 1880-9.



COLLEGE OF SURGEONS OF ENGLAND
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Work of the Sanitary Inspectors.—The practical every-day work of the Sanitary Department has suffered no diminution. The accompanying report of Mr. Allen, the Chief Inspector, under whose able supervision this has been carried on, gives the more important items in connection therewith.

Chief Inspector's Report upon the Work of the Sanitary Department during 1889.

To the Medical Officer of Health.

Sir,—Herewith I beg to hand you my report upon the work carried out in the Sanitary Department during the year 1889, together with statements setting forth the details thereof.

I am, Sir, yours faithfully,
FRANK W. ALLEN,
Chief Inspector.

22nd March, 1890.

In the course of house-to-house inspection over 7400 houses have been examined, as against 8000 last year and 6000 in 1887.

The smoke test has been used with good effect in the examination of 389 houses and premises, as against 301 last year, and the number of defects revealed by its aid was 260, detailed in the following

TABLE,

Shewing the Localities of Sewer Gas Escapes.

Into Sitting-rooms and Dining-rooms	15
,, Kitchens and Sculleries	32
,, Basement Kitchens and Cellars	29
,, Lobbies and other parts of Houses	18
,, Internal W.C.'s	10
,, Work-room	1
,, External W.C.'s	38
,, Yards, from around badly-set gullies, defective drains, &c.	56
,, Yards, from external soil pipes	12
From heads and joints of rain water downright pipes	42
From heads of downright pipes near to and below the level of Bed-room windows	7
Total	260

In eight of the cases of sewer gas escapes into houses, the defects were in connection with internal unventilated soil pipes.

Court inspection has been carried on in the usual manner, and improvements effected in many of them, as the old pebble paving and the ashpits have come within reach of orders. Most of the Courts are now lighted by the Watch Committee, only those containing less than three houses being omitted. 13 old and dilapidated houses in Courts have been demolished during the year. 670 ash-pits and manure-pits have been abolished during the year, and over 1300 portable bins have been provided for house refuse, the number now in use within the Borough being 5792. 25 common privies have been abolished during the year, and those remaining have been registered, for the purpose of frequent inspection.

In connection with Infectious Diseases Inspection, the following defects were found, either in the houses referred to in the certificates, or in the houses, closets, &c., in the same yards.

Defective and foul Ash-pits		39
,, ,, Manure-pits		4
Defective and dilapidated Closets		46
Defective and choked Drains		25
Defective unventilated Soil Pipes		7
Defective Urinal, Bath, and Lavatory wastes		19
Foul brick and defective shafts to Sinks		38
Sink wastes connected direct		2
Foul and defective rain water Cisterns		4
Filthy and dilapidated and damp Houses		81
Filthy Closets and Passages		23
Defective Paving		81
Defective, untrapped, and badly-set gullies, to sink and yard drainage		74
Polluted Well		1
Defective Privy		1
Cellar Drains directly to Sewers		19
Escapes of Sewer Gas into		
External Closets	7	
Cellars	6	
Living Room	1	
Yards, from defective drains, badly-set gullies, rain-water pipes connected direct, &c.	12	
	—	26
		490

The Common Lodging Houses have received 600 day and 465 night visits, and the tenants have carried out the quarterly cleansing and limewashing upon verbal notices.

Three houses have been added to the Register, one being the "Model" Lodging House in Britannia Street, built by Mr.

H. Wilkinson, to accommodate 46 persons, the cleanest, best furnished, and most complete house of this description.

The house in Abbey Street, from which tickets were withheld last year, having been altered by the owner to meet sanitary requirements, has been re-measured and new tickets issued.

Two of the oldest and worst of the Lodging Houses have become vacant, and the licenses have not been renewed.

The private Slaughter Houses have been kept under constant supervision, and in several well-known establishments the quality of the animals slaughtered has greatly improved, in consequence, no doubt, of the frequent visits and seizures of the Inspector.

The Cow Sheds and Dairies have been regularly visited, and the regulations referring to cleansing and limewashing have been properly carried out. There has been a further decrease in the number of cowkeepers, only 50 of the number registered carrying on the trade, their sheds being occupied by 339 cows, although providing sufficient accommodation for 420.

There have been 19 prosecutions during the year, viz. :—One for neglecting to comply with an order to remove swine ; five bad meat cases ; one for exposing an infected child ; one for not reporting a case of contagious disease ; eight under the Food and Drugs Act ; one under the Margarine Act ; one under the Horseflesh Act ; and one for obstructing an Inspector, under the Food and Drugs Act.

The accompanying Statements shew in detail the work done by the Inspectors, and it gives me great pleasure to be able to say again that it has been carried out with punctuality, energy, and despatch.

STATEMENT A.

Shewing the work done by the Sanitary Inspectors during the Year 1889.

	No. of Visits.
House to House Inspections	7427
Special Inspections and Investigations of Complaints	12,086
Re-inspections, to ascertain the progress of Sanitary and Informal Orders	8052
Visits in connection with Contagious Diseases	3196
Visits to Common Lodging Houses { Day 600 Night 465 }	1065
Do. Bakehouses	657
Do. Canal Boats (Inspector Pearce)	124
Total No. of Inspections	32,607

	Nos.
Samples purchased by Inspector Braley, for Analysis by the Borough Analyst	175
Samples of Well Water taken	15
Observations for the purposes of Smoke Prevention	1482
Stacks reported for Smoke Nuisance	14
Cases removed to the Fever Hospital	277
Houses disinfected by the Sanitary Staff	340
Schools do. do.	7
Common Lodging Houses fumigated do.	17
Notices sent to Schools and Public Libraries	1032
Swine reported to the Medical Officer of Health	218
Filthy Houses do. do.	13
Dilapidated House do. do.	1
Prosecutions under the Public Health and Local Acts	8
Do. do. Food and Drugs Act	9
Do. do. Margarine Act	1
Do. do. Horseflesh Act	1
Houses to which Smoke Test Applied	389
Do. which proved defective in test	292

STATEMENT B.

Shewing work carried out under Formal and Informal Orders during the Year 1889.

	No. of Orders.
To abolish Manure-pits and Ash-pits	670
,, repair do. do.	97
,, provide Ashtubs or bins	1338
To abolish Privies	25
,, ,, Privy Cesspools or Vaults	19
,, ,, Pail Closets	45
To erect new Water Closets	118
,, ,, ,, Pail Closets	28
,, repair, alter, or rebuild Closets	108
,, fix Closet Hoppers and Syphons	23
,, fix Flushing Apparatus and lay on Water Supply	23
,, repair do. do. do.	70
,, provide Pails	2
To alter and ventilate Soil Pipes	178
,, fix ventilated Syphons	176
,, lay New Drains	22
,, relay or repair defective Drains	376
,, clear choked Drains	186
To abolish Cisterns and fill up and cover Wells	2
,, cleanse or repair Cisterns	76
To fix lead or iron Sink Wastes	533
,, fix Traps or Gully Gratings	718
,, reset Gullies or provide new Gratings	97
To erect, alter, screen, or repair Urinals	155
,, repair, re-hang, or provide new doors for Closets and Dwellings	49
,, repair, renew, and make good spouting	215
,, cleanse and limewash Closets and Passages	271
To pave Yards and Passages, or repair paving	568
,, provide new, or relay and repair Floors	267
To repair Roofs	203
,, repair dilapidated Houses	2
To cleanse and limewash Houses	1277
,, cut off, take up, and stop old drains	5
,, remove Manure and offensive matter	1
To remove Animals kept in such a condition as to be a nuisance	143
To close Wells and lay on Waterworks supply of water	6
To alter Chimneys and Miscellaneous	357
Total	8449

N.B.—More than 80 per cent. of these were Informal Orders.

STATEMENT C.

Shewing the number of Offensive Trades carried on, and Registered and Licensed Premises within the Borough, requiring the attention of the Inspectors.

DESCRIPTION OF TRADE.	No.
Slaughter Houses	68
Tripe Houses	27
Common Lodging Houses	28
Bake Houses	173
Cow Sheds	64
Milk Shops and Dairies	184
Tallow Melters	4
Ammoniacal Liquor Works	1
Chemical Works	2
Carpet Beating Works	1
Fellmonger	1
Leather Dresser	1
Bone Boiler	1
Soap Boilers	3
Knacker's Yard	1
Total	559

STATEMENT D.

Shewing the number of Visits made by the Inspector of Meat, and the quantity of Meat, &c., condemned during the Year 1889.

No. of Visits to	Slaughter Houses	7436
Do.	Cowsheds, Dairies, and Milkshops	6292
Do.	Cattle Market	194
	Total	13,922

The Inspector is on duty in the General Market throughout the whole of every Saturday, and in addition to this the stalls in the Fish and Poultry Market have been visited several times every day.

MEAT, &C., CONDEMNED AND DESTROYED.

	Tons.	Cwts.	Qrs.	Lbs.
Meat	5	1	3	11
Fish	20	18	2	8
Fruit	0	6	0	18
Cheese	0	6	0	0

Poultry and Game	20 head.
Hares and Rabbits	183 ,,

Part II.

FEVER HOSPITAL.

Report for the Year ending Dec. 31st, 1889,

Increased Number of Patients.

Additional Accommodation for Nurses.

A considerable increase in the number of admissions to the Hospital has to be recorded, compared with the year 1888. Happily, the only disease that has caused this increase was Scarlatina, which toward the autumn of the year began to prevail more extensively in the town than for many months past. The Hospital, by providing a ready means of isolation to the large majority of the cases met with (nearly 80 per cent. of all the cases known to have occurred having been taken to the Hospital), has done good and useful work, and has probably been the means of preventing a very wide-spread epidemic in the town. The increased number of patients in the wards necessitated a corresponding increase to our nursing staff, and the insufficient and inadequate accommodation for these latter was again prominently forced upon the attention of the Committee, and it was resolved to construct five small bed-rooms over the administrative block of the Hospital, for the use of the nurses. These rooms are now complete, and will be very acceptable; but it is to be hoped that ere long the whole question, large as it is, of providing a more substantially constructed, arranged, and equipped Hospital, in place of the present wood and iron buildings, may engage the serious consideration of the Corporation. The present structures, from an architectural and administrative point of view, reflect but little credit upon a wealthy and large municipality like Leicester.

Need for new Hospital.

The patients remaining in the Hospital on the last day of 1888 were 12 only. There have been admitted during the year 330, of which 327 were suffering from Scarlet Fever. Neither the Small Pox or Quarantine Wards were in use the whole year through.

Particulars respecting the admissions, mortality, ages, &c., will be found in the following Tables A, B, C, D, and E.

STATISTICS OF FEVER HOSPITAL.

Details of Cases under treatment during the Year 1889.

TABLE A.

General Summary.

Remaining in Hospital Dec. 31st, 1888	12
Admitted during the year 1889	330
Total under treatment	342
Discharged cured	270
Died	6
Remaining in Hospital Dec. 31st, 1889	66
	342

TABLE B.

Shewing number of each Disease under treatment, with the Death-rate thereof.

	In Hospital, Dec. 31. 1888	Admitted.	Discharged Recovered.	Died.	Mortality per cent.	Remaining in Hospital Dec. 31, 1889
Scarlet Fever	12	327	268	5	1·4	66
Typhoid Fever	0	1	1	0	0	0
Measles	0	1	1	0	0	0
Erysipelas ..	0	1	0	1	100·0	0
Totals ..	12	330	270	6	1·7	66

TABLE C.

Shewing Monthly Admissions of Scarlet Fever.

January	9
February	9
March	16
April	12
May	15
June	9
July	23
August	17
September	31
October........................	81
November.....................	54
December	51
Total	327

TABLE D.

Ages of Scarlet Fever Patients.

Age.	No. Admitted.	Deaths.
Under 1 year	1	0
From 1 to 2 years ..	8	0
,, 2 to 3 ,, ..	22	0
,, 3 to 4 ,, ..	33	2
,, 4 to 5 ,, ..	37	2
,, 5 to 6 ,, ..	43	1
,, 6 to 7 ,, ..	31	0
,, 7 to 8 ,, ..	34	0
,, 8 to 9 ,, ..	18	0
,, 9 to 10 ,, ..	26	0
Over 10 years......	74	0
Totals......	327	5

TABLE E.

Cases of Infectious Disease admitted into the Fever Hospital from 1878 to 1889, inclusive.

Year.	Small-pox.	Scarlet Fever.	Erysipelas.	Typhoid.	Measles.	Unclassified.	Quarantine	Total.
1878	8	51	18	0	0	1		78
1879	0	247	22	0	0	0		269
1880	1	230	47	5	0	0		283
1881	6	388	46	0	0	0		440
1882	30	460	44	0	0	0		534
1883	12	383	12	0	0	0		407
1884	6	354	5	0	0	0		365
1885	8	900	3	0	0	3	10	924
1886	1	439	0	0	10	5	2	457
1887	10	151	1	13	0	2	14	189
1888	23	94	1	0	0	0	39	154
1889	0	327	1	1	1	0	0	330

NOTE.—Prior to 1885 the number of persons in quarantine is not known. In the year 1887 two persons in quarantine developed Small-pox, and in 1888 three; these appear in the Small-pox column as well as in the quarantine column of the above Table.

From Table C it is seen that until September the monthly admissions to Hospital were low in number, but during the last three months they rapidly increased, more than half of the total having been admitted during that time. At the time of writing the cases are diminishing.

Low Scarlet Fever Mortality.

There was no death during the year from Scarlet Fever until August; between that time and the end of the year five deaths occurred. From Table B it is seen that the mortality on the cases under treatment has only been 1·4 per cent., an exceptionally low proportion, and one which is a considerable source of satisfaction to those having the charge and administration of the Hospital. In the early months of the year the cases were almost without exception of a very mild type; but as the patients increased in number, during the last quarter, the type of the disease in many instances was of a much more severe character. In three of the fatal cases suppuration of the cervical glands contributed to the fatal issue; in the other two the disease was of that form known as Scarlatina maligna, and proved rapidly fatal.

Complications in Scarlet Fever.

Amongst those that recovered the following complications and sequelæ were met with:—In fourteen cases the attack was followed by Nephritis, with Albuminuria. In twenty-two cases Otorrhœa, or inflammation and suppuration of the internal ear, occurred; in four cases glandular abscesses of the neck formed; in one abscess of the groin; and in one abscess of the eye-lids, accompanied with Erysipelas, a rather unusual sequelæ. In one instance the Scarlet Fever was complicated with Measles, in one with Varicella, and in two with Typhoid Fever. Six of the patients were suffering from other diseases at the same time: thus, three had Morbus Coxoe, one a fractured leg, one a severe burn, and one was suffering from infantile Paralysis.

It will be observed that one case only of Erysipelas, and that a fatal one, was admitted. The patient was a child suffering from an exhausting abscess, with Septicæmia. The Erysipelas being a very minor feature of the illness, and contributed little towards the fatal result.

New Disinfecting Apparatus.

It may be remembered that in last year's Report mention was made of a new steam disinfecting apparatus, which had recently been erected at the Hospital, by Messrs. Goddard and Massey. This apparatus has been in constant work during the past twelve months, and has contined to give entire satisfaction. The remarks made last year concerning it are fully borne out by the lengthened experience of its working. As this was one of the first of its kind to be erected in England, it has attracted some attention, and has been visited by the representatives of various Health Authorities, &c.

Hospital Expenditure.

In Table F is given the expenditure and the receipts of the Hospital for the year. The increased expenditure has been caused by the increased number of patients, and the receipts are increased chiefly from the fact of there having been received more patients from the adjoining Health Authorities, to whom a charge of a guinea and a half per patient per week is made. The number of these patients received has been ten, *i.e.*, four from Oakham, three from Aylestone, and three from New Humberstone. The total expenditure has been £1440 15s. 7d., or a total cost per patient treated of £4 4s. 3d. After deducting the receipts from the expenditure there remains a net expenditure of £1325 19s. 0d., which is the cost to the town for the treatment of 332 patients, and gives as the total cost to the rates per patient treated £3 19s. 10d.

The average daily number of occupied beds during the year was 36·3.

The average stay of each patient in Hospital was 39 days. The cost therefore per week per occupied bed was 15s., which, for a Hospital of this character, is certainly not excessive. Compared with last year, the cost per bed occupied is less than one-half: this arises from the fact so well known in the administration of Fever Hospitals, that the general maintenance and establishment charges do not rise and fall in proportion to the number of patients treated. The chief item of fluctuation is the cost of food and medicines. Hence the smaller the number of patients treated, the greater the total cost per patient, and *vice versâ*.

TABLE F.

Expenditure.

	£	s.	d.	£	s.	d.
Drugs and Appliances	5	18	0			
Wines and Spirits	8	12	0			
Dispensary Sundries	8	10	7			
				23	0	7
HOUSE EXPENSES:—						
Butcher's Meat, Fish and Poultry	178	10	11			
Bread	41	4	6			
Butter	50	4	8			
Milk	118	0	3			
* Ale and Porter	28	16	0			
Mineral Waters	1	6	0			
Groceries and other Provisions	106	17	7			
Gas	38	10	7			
Coal	123	7	3			
				686	17	9
Salaries and Wages	363	9	4			
Advertising, Printing, and Stationery	4	15	0			
Linen, Bedding, &c.	64	9	6			
Fixtures and Furniture	9	17	3			
Domestic Implements and Utensils	21	13	3			
Alterations and Repairs	62	9	7			
Roadway and Footpath	91	15	0			
Painting and Whitewashing	0	0	0			
Rates and Insurance	15	13	3			
Fire Hose	18	11	6			
Garden Seeds, Plants, &c.	7	10	10			
Water Rate	1	16	0			
Rental of Telephone	19	0	0			
Horsehire and Horsekeep	30	17	3			
General and Sundries	18	19	0			
				730	17	3
				£1440	15	7

Receipts.

	£	s.	d.	£	s.	d.
Maintenance of Patients repaid	102	0	10			
Use of Disinfecting Chamber	1	17	6			
Sale of Hay, Garden Produce, &c.	10	18	3			
				£114	10	7

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* These amounts for House Expenses are for actual quantities and expenses *incurred* during the year: other figures in this Table show actual payments made.—H. T.

The following list of presents and donations for the patients in the Hospital is a more extensive one than in some former years. Some of these are of more than passing use to the Hospital, whilst in many instances plants, flowers, and toys, were sent by patients and their friends, as a small acknowledgment of benefits received within the wards.

Mr. Bodycot, Christmas Tree.

Dr. Clifton, books.

Children of Hazel Street School, toys and oranges.

Children of Newfound Pool Mission Room, Christmas cards.

Ald. Windley (children of), dolls, cards, books.

Miss Green, Christmas cards, books, and toys.

Mr. Green (Belgrave Gate), plants, flowers, and oranges.

Sir A. G. Hazlerigg, books and toys.

Mrs. Henderson's Children, postal order 5s.

Miss Hill, scrap book.

Mrs. Holland's Children, toys and Christmas cards.

Dr. Johnston, magazines and papers.

Mr. Gordon (the late), toys.

St. Leonard's Church, flowers.

Miss Mallett, periodicals.

Mrs. Newett, crackers and confectionery.

Mrs. Penny, toys.

Freddy Prentice, mechanical toys.

Miss Wheeler (De Montfort Street), toys and dolls.

Miss Stretton, bath chair.

Councillor Wilford, magazines and biscuits.

Ald. Windley, dressed dolls, papers, &c.

Miss Wigg, illustrated papers.

Canon Vaughan, books to nurses and servants.

M. D., Christmas Cards for patients.

SUMMARY OF VITAL AND MORTAL STATISTICS, &c., for 1889.

Area of Borough.—3030 acres, divided into seven wards, of which the sixth, or West St. Mary's, including considerably more than one-third of the whole Borough, in the greater part is yet unoccupied by buildings; whilst in the first, the third, and the fourth wards, the land is almost entirely built over.

Population.—150,520, by the Registrar-General's estimate in the middle of the year.

Density.—49 persons per acre; but in parts more than double this.

Inhabited Houses.—29,407 (estimated number).

Rateable Value.—£522,309, at Michaelmas.

Marriages.—1211. The marriage rate for the year, 16 per 1000 of the population.

Births.—4789; the birth-rate for the year being 31·8 per 1000.

Vaccinations.—172, of which 141 were performed by private practitioners, and 31 by public vaccinators.

Deaths.—2513. Death-rate for the year, 16·7 per 1000.

Increase of Population.—3730; but the natural increase, or excess of births over deaths, was only 2276.

Part III.

VITAL and MORTAL STATISTICS.

Population Estimate.

Population Area and Density.—The population of Leicester, in the middle of 1889, was estimated to be 150,520. It is more than probable, however, that this is an excess of the actual number, as has been explained in the Reports for the past two or three years. Next year we shall have, however, the reliable data of the census returns, and shall be able to correct, if need be, the errors of the past few years.

Density of Population.

The desirability of a quinquennial census has been alluded to in Parliament, but at present no definite action has been taken in this direction. A simple enumeration of the population once in five years, as carried out in many countries, would be of much service for statistical purposes, in very many ways. The area of the Borough remains unaltered, though the question of extension of the Borough boundaries is again attracting attention. Petitions from more than one of the adjoining townships, for amalgamation with Leicester, have been received by the Council. The present acreage of the town is 3030: calculated upon the above estimate of the population, the density will be 49 persons per acre. But this average density of 49 persons living on every acre of ground is purely a hypothetical one: in the older and crowded parts of the Borough more than double this number obtains, whilst in other parts of the town many acres of land are as yet unbuilt upon.

Inhabited Houses and Rateable Value.—The number of inhabited houses at the end of the year, based upon figures in the Surveyor's office, was 29,407. The rateable value of the Borough at Michaelmas last was £522,309, an increase of £14,386 on the previous year.

Marriages.—Contrary to the past year or two, the number of marriages has somewhat increased, the number registered being 1211. On the estimated population, this gives a marriage rate of 16 per 1000; that is, 16 persons in every 1000 in the Borough have entered into matrimony. Last year the rate was 15·5 per 1000.

Births.—The steady fall in the number of births, compared with the increase in the population, still continues. Last year only 4789 births were registered, being only two more than in 1888. Of these births 2403 were males and 2386 females. In the first quarter of the year 1204 were registered, in the second 1255, in the third 1111, and in the last quarter 1219. In Tables I. and II. is seen how the proportion of births has steadily declined since 1883. The birth-rate, last year, in Leicester was 31·8 per 1000, the lowest recorded during the past decade.

Decreased Birth-rate.

In all England and Wales the birth-rate last year was 30·5, and in the 28 large English towns it was 31·0 per 1000. The town with the highest birth-rate was Cardiff, 38·6, whilst the lowest was recorded at Huddersfield, where it reached only 24·6 per 1000 of the population.

Vaccinations.—Vaccination in Leicester shews a still further decline: only 172 children were vaccinated during the year, of which 31 were by the public vaccinators and 141 by the private medical attendants. This matter has been the subject of lengthened comment in the Health Reports of the past two or three years, and will not further be alluded to here. It may, however, be noted that important action has been taken by

Decrease in Vaccination.

TABLE I.

Shewing the Population, Inhabited Houses, Marriages, Births, and Deaths, for the Year 1889, and ten years preceding.

The Year.	Estimated Population.	No. of Inhabited Houses.	Marriages.	Registered Births.	Corrected number of Deaths.			Deaths in Public Institutions.
					Total all ages.	Under one year.	Under five years.	
1889.	**150,520**	***29,407**	**1211**	**4789**	**2513**	**1004**	**1276**	**270**
1879	117,610	24,616	1141	4687	2651	878	1366	
1880	120,325	24,794	1179	4860	2960	1070	1727	
1881	123,120	24,974	1153	4711	2654	965	1374	
1882	126,275	25,511	1201	4855	2528	942	1297	
1883	129,483	25,818	1207	4823	2484	913	1271	
1884	132,773	25,937	1152	4851	2937	1133	1615	
1885	136,147	26,794	1114	4682	2641	907	1315	
1886	139,606	*26,934	1222	4858	2738	1052	1383	265
1887	143,153	*27,558	1169	4689	2722	1011	1407	306
1888	146,790	*28,417	1138	4787	2640	980	1335	320
Average of ten years, 1879-1888	131,528	26,135	1167	4780	2695	985	1409	

NOTE a.—Population at census 1881 was 122,376.	NOTE c.—Number of inhabited houses at census 24,974.
,, b.—Area of present Borough in acres 3030.	,, d.—Average number of persons per house at census 4·9

*The number of Inhabited houses in these years is estimated from data in Surveyor's office. In previous years the figures have been supplied by the Overseers.

TABLE II.

Shewing the Annual Birth and Death Rates, Death Rates of Children, and proportion of Deaths in Public Institutions, in a Thousand Deaths, for the year 1889, and ten years preceding.

In Year.	Birth-rate per 1000 of the Population.	Death-rate per 1000 of the Population.	Deaths of Children under 1 year per 1000 of Registered Births.	Deaths of Children under 1 year per 1000 of Total Deaths.	Deaths of Children under 5 years per 1000 of Total Deaths.	Deaths in Public Institutions per 1000 of Total Deaths.
1889.	**31·81**	**16·68**	**209·6**	**399·5**	**507·7**	**107·4**
1879	37·31	22·54	187·3	331·1	513·0	
1880	40·39	24·70	220·1	360·3	581·6	
1881	38·26	21·56	204·8	363·2	517·7	
1882	38·44	20·05	194·4	372·6	513·1	
1883	37·24	19·18	190·7	367·5	511·6	
1884	36·53	22·12	233·5	381·6	543·9	
1885	34·38	19·39	193·5	343·4	513·8	
1886	34·80	19·61	216·5	384.2	505·1	96·7
1887	32·75	19·01	215·8	371·7	516·9	112·4
1888	32·61	17.98	204·7	371·2	505·7	121·2
Average of ten years 1879-88.	36·27	20·58	206·1	364·6	522·3	

Parliament, during the past year, with regard to this question. As a result of the opposition manifested in Leicester and elsewhere a Royal Commission was appointed to inquire into, and take evidence of all and every kind bearing upon the subject. This commission is still engaged in its work, and the result bids fair to be the most exhaustive inquiry ever made into the merits or demerits of Vaccination.

Deaths and Annual Death-rate.—The total corrected number of deaths in the Borough was 2513, being 127 less than in the preceding year. The death-rate, calculated on the estimated population, was only 16·68 per 1000 persons living. This is the lowest death-rate of which we have any authentic record in the town, and is 3·9 per 1000 below the average death-rate of the last ten years. (See Tables I. and II.) In the above number the deaths occurring in the Borough Asylum and the Fever Hospital (both situate outside the boundaries of the Borough) are included, whilst those of patients brought into Leicester from the adjoining districts, for treatment in the County Asylum and the Infirmary, are excluded.

Low Death-rat

Mortality at different Seasons of the Year.—From the subjoined figures it will be seen that the mortality was spread more equally over the four quarters of the year than is sometimes seen in Leicester. As usual, the third quarter was swollen by the deaths from Diarrhœa, but the second quarter of the year also included some of these, as 22 deaths were registered from this disease before the end of June. In the first quarter of the year Measles were prevalent, and caused 47 deaths, or about two-thirds of the whole number recorded.

Seasonal Mortality.

	1889.	1888.	1887.	1886.	1885.
First Quarter ..	663	743	712	658	750
Second ,, ..	549	615	570	588	602
Third ,, ..	699	647	782	829	746
Fourth ,, ..	602	635	658	663	543
Totals	2513	2640	2722	2738	2641

TABLE III.

Death-rate of the large English Towns during each of the past 10 years.

	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889
28 large Towns			22·3	21·6	21·6	20·5	20·9	20·8	19·4	19·3
London	21·6	22·1	21·4	20·4	20·4	19·7	19·9	19·6	18·5	17·4
Brighton	19·8	19·0	21·7	19·2	17·9	17·1	17·1	16·9	16·1	15·1
Portsmouth	19·8	19·7	21·5	18.6	19·4	19·7	33·8	19·5	18·8	18·1
Norwich	24·3	19·5	20·6	19·6	21·2	20·3	23·3	20·4	20·2	18·4
Plymouth	35·1	19·9	21·2	20·9	21·1	22·3	23·5	22·7	22·3	25·2
Bristol	21·0	19·6	19·2	17·9	18·4	19·7	19·3	20·4	16·9	17·6
Wolverhampton	21·3	21·2	22·4	21·3	23·4	20·2	22·2	21·7	20·7	20·6
Birmingham	20·7	20·0	20·9	21·3	21·4	19·3	19·9	19·7	17·8	18·7
Leicester	**24·7**	**21·7**	**20·0**	**19·2**	**22·1**	**19·4**	**19·6**	**19·0**	**17·9**	**16·7**
Nottingham	23·8	22·4	23·6	21·2	22·9	19·9	20·4	18·7	17·3	17·0
Liverpool	27·1	26·7	26·5	26·7	25·2	23·8	23·8	23·7	20·3	21·6
Manchester	26·9	25·5	26·7	27·6	26·4	26·5	26·3	28·7	26·1	26·7
Salford	28·0	22·6	23·2	22·4	22·3	21·1	22·1	22·2	21·1	20·5
Oldham	24·7	22·8	24·6	22·0	24·5	22·0	22·8	23·8	20·3	20·4
Bradford	22·9	19·7	21·2	18·4	20·1	17·7	19·2	19 9	17·1	19·2
Leeds	22·0	21·6	23·2	23·3	24·2	19.9	21·9	21·1	20·6	22·1
Sheffield	22.9	21·1	21·7	22·9	22·4	20·7	19·8	21·6	20·5	20·9
Hull	23·4	23·8	23·2	22·8	21·1	17·2	18·8	19·3	16·4	20·3
Sunderland	25·0	20·9	26·5	24·5	23·0	23·8	19·5	19·7	18·1	22·9
Newcastle	22·8	21·8	23·1	25·4	23·1	26·1	22·2	25·3	20·6	25·2
Derby						18·1	18·2	17·1	16·3	16·4
Birkenhead						19·5	19·1	21·0	17·8	17·8
Bolton						20·8	23·1	21·3	21·6	22·0
Blackburn						21·8	25·5	25·5	23·9	25·5
Preston						27·1	28·9	27·9	23·9	30·0
Huddersfield						20·1	19·6	23·0	18·5	18·8
Halifax						19·7	22·7	21·0	19·4	21·6
Cardiff						25·7	22·6	21·9	20·5	19·5

Leicester compared with other Towns.—The year 1889 was again marked by an unusually low death-rate throughout the country. In all England and Wales it was 17·9 per 1000, as against 17·8 per 1000 in the preceding year. In the 28 large towns of England the death-rate was 19·3 per 1000; so that Leicester, with its rate of 16·7, is 2·6 below the average of these. In Table III., it will be seen that only two towns had a lower mortality than our own, these being Brighton and Derby, Leicester standing third on the health roll of the country, as guaged by its rate of mortality. The death-rates in these large towns varied from 15·1 in Brighton to no less than 30·0 per 1000 in Preston, which latter town has this year the unenviable distinction of being at the bottom of the list.

True Comparative Death-rates.—In comparing the mortality of one town or community with another, it is necessary, as has been before pointed out, to allow for the varying age and sex distribution of the populations compared. A community with a large excess of either aged persons or of infantile lives will shew a higher rate of mortality than those where the population is composed more largely of adults in the prime of life. It is not difficult to make this allowance or correction for our English towns, by means of data obtained at the last census, and in Table IV. the recorded and the corrected death-rates are placed side by side. In the third column of this Table 1000 is taken as the standard mortality for the whole country, and the towns are then placed in their order of position as compared with this standard. The relative position of the various towns is but little affected. Leicester still remains third from the top. The third column of this Table shews that for every 1000 deaths that took place in England and Wales, only 865 occurred in Brighton, 972 in Leicester, and no less than 1816 in Preston.

Position of Leicester amon large towns.

Mortality at different Ages.—It has been customary, during the past year or two, to insert a Table in this Report shewing the mortality at different age periods, for the sake of

TABLE IV.

Recorded and corrected Death-rates, in 28 large English Towns, during 1889.

Towns in order of their corrected Death-rate.	Recorded Death rates per 1000 per annum.	Corrected Death rates per 1000 per annum.	Comparative Mortality Figure.
England and Wales	17·9	17·9	1000
28 large Towns	19·3	20·5	1145
Brighton	15·1	15·5	865
Derby	16·4	17·0	944
Leicester	**16·7**	**17·4**	**972**
Norwich	18·4	17·5	977
Nottingham	17·0	18·0	1005
Bristol	17·6	18·2	1016
London	17·4	18·4	1027
Portsmouth	18·1	18·6	1039
Birkenhead	17·8	19·0	1061
Birmingham	18·7	19·9	1111
Huddersfield	18·8	20·5	1145
Hull	20·3	20·9	1167
Cardiff	19·5	21·1	1178
Bradford	19·2	21·2	1184
Wolverhampton	20·6	21·2	1184
Salford	20·5	22·3	1245
Sheffield	20·9	22·4	1251
Oldham	20·4	22·6	1262
Halifax	21·6	23·4	1307
Liverpool	21·6	23·6	1318
Leeds	22·1	23·6	1318
Sunderland	22·9	23·8	1329
Bolton	22·0	24·1	1346
Plymouth	25·2	24·9	1391
Newcastle	25·2	26·6	1486
Blackburn	25·5	27·7	1547
Manchester	26·7	29·7	1659
Preston	30·0	32·5	1816

comparison with the standard English life Tables, but as the numbers of persons living in the Borough at the various groups of ages is now very uncertain, this Table has for the year now under review been omitted. When we have the accurate figures from next year's census to work upon, this will be re-inserted, being one of considerable importance, as it brings out prominently the death-rates at different periods of life, and compares them with the country at large.

High Infantile Mortality.

Infantile Mortality.—Although the general death-rate of the Borough is so satisfactory, it is matter of regret that the infantile mortality of the town shews during the year no improvement. 1004 deaths of children under one year old were registered, or 209 to every 1000 births, equal to more than one in five. This is a slightly increased rate on the previous year, as seen in Tables II. and V.

In all England and Wales the rate was 144 per 1000 of registered births. Amongst European countries some shew a lower infantile death-rate than England, whilst others are much higher; thus, according to figures recently published, of every 1000 children born alive in Norway, 106 die during the first year; in Sweden, 137; in France, 169; in Prussia, 217; in Italy, 220; in Hungary, 254; in Austria, 258; in Bavaria, 317; and in Wurtemburg no less than 329. From this it would appear that the care of young children and the hygiene of infancy is much better understood and practised in Norway than in other parts of Europe. In the 27 large English provincial towns the rate was 177 per 1000 births, the same as that recorded in 1886. In 1888 the rate in these large towns was 161 (see Table V.) The only town with a higher infantile mortality than Leicester was Preston, which is at the bottom of the list with 264 deaths per 1000 births. The chief diseases to which these infantile deaths are assigned, so far as the mortality records shew, are given in Table VI.

TABLE V.

Infantile Mortality in the Large English Towns.
Deaths under one year per 1000 Births.

	1889.	1888.	1887.
Derby	148	143	142
Portsmouth	138	134	143
Brighton	131	149	149
Bristol	146	123	149
Sunderland	181	133	151
Halifax	175	154	153
Birkenhead	170	151	156
London	141	146	158
Norwich	163	163	158
Hull	184	139	165
Nottingham	182	151	170
Bolton	167	172	171
Leeds	177	173	172
Cardiff	158	141	172
Newcastle-on-Tyne	175	137	174
Wolverhampton	180	167	176
Birmingham	170	154	176
Sheffield	174	178	177
Bradford	182	153	178
Huddersfield	168	157	181
Liverpool	188	168	186
Oldham	178	151	187
Manchester	176	176	191
Salford	181	184	195
Plymouth	166	163	196
Blackburn	204	190	201
Preston	264	188	214
Leicester	**209**	**204**	**215**
Average of 27 Provincial Towns	177	161	176

TABLE VI.

Rates of Mortality of Children under one year of age, from chief Infantile Diseases, per 1000 Births.

	1887.		1888.		1889.	
	Total Deaths.	Rate per 1000 Births.	Total Deaths.	Rate per 1000 Births.	Total Deaths.	Rate per 1000 Births.
From all causes ..	1011	215·8	980	204·7	1004	209·6
Atrophy & Debility	212	45·2	210	43·8	202	42·1
Diarrhœa	209	44·5	119	24·8	190	39·7
Convulsions	128	27·2	179	37·3	198	41·3
Lung Disease.. .	299	63·7	150	31·3	136	28·3
Premature Birth ..	99	21·1	117	24·4	101	21·0
Tubercular Disease	61	13·0	37	7·7	28	5·8
Measles	23	4·9	23	4·8	16	3·3
Whooping Cough	26	5·5	39	8·1	10	2·0

Rearing of Infants.

Looking at this Table, it is seen that the four chief causes are Atrophy, Debility, Diarrhœa, and Convulsions, and each additional year's experience of your Officer of Health makes it more certain that a very large proportion of these deaths are really and truly the result of—first, a weakly and unhealthy congenital condition of these infants; and secondly, improper methods of feeding and general tending of infants and young children. Mothers—young mothers especially—are constantly found woefully ignorant of the most elementary principles which should guide them in the rearing of their babes. The chief remedy for this lamentable state of things is to be looked for in an improved education of the poorer classes, and a diffusion by means of our educational and other institutions of a knowledge of the more important primary laws affecting the health and physical well-being of young children.

It is not to be supposed that the large infantile mortality of our town is the result of wilful neglect, except in a minority of cases; but the figures in the following paragraphs respecting the deaths of illegitimate children, and of those having insurances upon their lives, are unpleasantly suggestive.

Illegitimacy.—The number of illegitimate births was 248, an increase of 67 over the previous year. The deaths of illegitimate infants were 73, which is equal to 294 per 1000 births, as against 209 per 1000 of all births. This is a large decrease on the death-rate of illegitimate children in comparison with some former years.

Insurance of Infantile Lives.—During the past year returns have been obtained from the local Registrars, shewing what number of children dying have had insurances effected upon their lives. In 562 instances children under 10 years of age had been insured; of these 539 were under five years of age, and no less than 366 were less than one year old. So that out of the 1276 deaths last year, of children under five years of age, more than 41 per cent. were insured; and of the 1004 deaths of infants less than a year old, more than 36 per cent. were insured. Possibly a more important and useful piece of information would be to know the amounts for which these lives were insured. That this system of infantile life assurance has been abused in some instances is not to be doubted. The Select Committee of the House of Commons charged with the duty of enquiring into this subject, with a view of some legislative action being taken if desirable, again took evidence during the past year, but its report has not yet been made public.

Insurance Returns for 1889.

From a consideration of the various points involved, it will possibly be found expedient to more strictly limit the amount of money payable at these deaths, or even if necessary, as a check to any abuse of a system which manifestly has its good side, there should be some method provided whereby in suspicious cases no money in actual cash should be paid to the parents, but that the necessary expenses involved in the funeral should be defrayed directly by the insurance company.

Ward Mortality.—For reasons already given, the true mortality of the various wards of the Borough cannot be given; but after the taking of the next census, the ward mortality rates will again be computed. In Table VII. is given the actual gross number of deaths in each ward at four groups of ages.

TABLE VII.

Deaths at different Ages and Death-rates, in various Wards of the Borough, during 1889.

	All Ages.	Under 1 Year.	1 Year to 5.	Over 5 years.	Estimated Population.	Ward Mortality per 1000 living.
1.—St. Martin's Ward	18	2	1	15	?	*Death-rate not calculated owing to Ward Population being unknown until next census.*
2.—N. Margaret's ,,	324	146	50	138	?	
3.—M. Margaret's ,,	634	278	93	257	?	
4.—E. Margaret's ,,	738	246	55	435	?	
5.—E. Mary's ,,	101	16	9	76	?	
6.—W. Mary's ,,	408	168	40	201	?	
7.—All Saints' ,,	290	148	23	116	?	
Totals	2513	1004	271	1238		

Classified Causes of Death.—The modern classification of the causes of death arranges them into eight large or main groups, which are again divided into sub-classes: these set out in full detail will be found in the Mortality Tables, in the Appendix. Table VIII. gives the figures for each of these principal groups or divisions, and the numbers can there be compared with those of the previous year. It is satisfactory to find that the zymotic group shews a decline on past years, the rate per 1000 of the population being 2·4. If it were not for our large mortality from Diarrhœa, which is included in this group of disease, the zymotic rate would be much lower.

TABLE VIII.

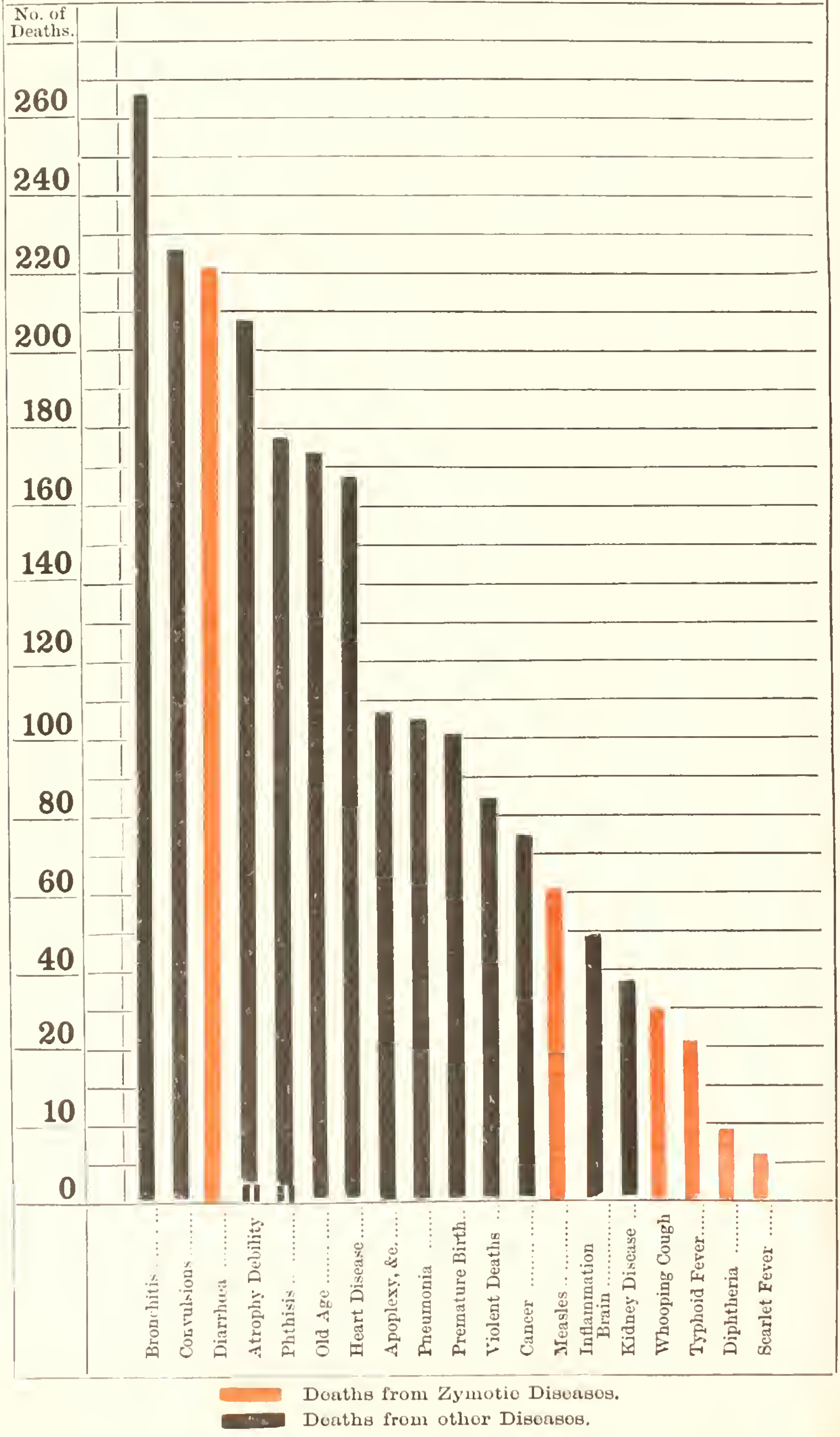
Total Deaths, Death-rate, and per centage of Deaths of the eight principal groups of disease.

	1888.			1889.		
	Total Deaths.	Rate per 1000 living.	Per centage of Total Deaths.	Total Deaths.	Rate per 1000 living.	Per centage of Total Deaths.
Zymotic Disease ..	388	2·6	14·7	372	2·4	14·8
Parasitic ,,	6	..	..	2	..	..
Dietic ,,	2	..	..	0	..	..
Constitutional	332	2·2	12·5	329	2·1	13·0
Local............	1281	8·7	48·5	1198	7·9	47·6
Developmental....	541	3·7	20·5	502	3·3	19·9
Violence	77	0·5	2·9	83	0·5	3·3
Ill-defined........	13	0·99	0·5	27	0·1	1·0

Each of these groups will now be considered separately, devoting chief attention to the first, or zymotic, as it is this class of disease which specially indicates the sanitary condition of any district, including as it does many of those diseases which are directly amenable to vigorous and well-directed action on the part of a health authority.

The following Diagram gives in comparative form the deaths from those diseases which have caused the principal amount of mortality during the year.

Diagram shewing relative mortality from some of the principal causes of death in 1889.



CLASS I.—ZYMOTIC DISEASE.

The total number of deaths included in this group of diseases was 372, made up thus:—From Measles 62, from Scarlet Fever 6, from Diphtheria 10, Whooping Cough 26, and Typhoid Fever 22. These are the common infectious, or miasmatic diseases.

Diarrhœal diseases caused 222 deaths, Syphilis 12, Erysipelas, Blood Poisoning, and Puerperal Fever 12. The zymotic death-rate was 2·4 per 1000 for the year, nearly one-half of which is due to Diarrhœa. The zymotic death rate in the 28 large towns, including London, was 2·7, and in the 27 large provincial towns 3·1; so that our own town was considerably below the average rate. The lowest zymotic death-rates were in Brighton and Derby, with 1·5 per 1000; the highest in Salford, with 4·6; Plymouth, 5·8; and Preston, with 7·7.

Ward Mortality from Zymotic Diseases.—In Table IX. is given the distribution of the deaths from the chief zymotic diseases, in the different wards of the Borough.

Middle St. Margaret's having the largest population of any of the wards, together with a densely crowded and poor one, always has the largest total; but the number of deaths in this ward from these infectious diseases was 17 less than in 1888.

Amount of Illness from Infectious Disease.—With the exception of Measles and Whooping Cough, concerning which we have no knowledge as to the actual number of

TABLE IX.

Deaths in each of the Wards of the Borough from the chief zymotic diseases during 1889.

	Whooping Cough.	Measles.	Scarlet Fever.	Diphtheria.	Fever.	Diarrhœa.	Total.
1st Ward. .... (St. Martin's)	0	0	0	0	0	0	0
2nd Ward............ (North Margaret's.)	3	11	1	0	6	39	59
3rd Ward .... (Middle Margaret's)	10	14	3	3	6	62	99
4th Ward .... (East Margaret's)	5	15	2	5	3	52	82
5th Ward .... (East Mary's)	1	1	0	0	1	4	7
6th Ward .... (West Mary's)	6	6	0	2	5	41	60
7th Ward .... (All Saint's)	1	15	0	0	1	24	41
Totals	26	62	6	10	22	222	348

Number of cases of Infectious Disease.

children who have suffered therefrom, we are able to state exactly the *number of persons who have been ill* from one or other of the common infectious diseases. The total for the year was 860, whom 409 have been ill from Scarlet Fever, 84 from Diphtheria, 147 from Typhoid Fever, 1 from Puerperal Fever, and 219 with Erysipelas. No person has been known to have had either Small Pox or Typhus Fever during last year in Leicester. The total in the year 1888 was 749 (see Tables X. and XI.) The excess this year over its predecessor is accounted for entirely by the increased number of Scarlet Fever cases which arose during the last quarter.

TABLE X.

Shewing number of persons suffering from notified Diseases during each of the years 1889, 1888, 1887, and 1886.

1889.	Scarlet Fever.	Typhoid Fever.	Diphtheria.	Erysipelas	Puerperal Fever.	Small-pox.
First Quarter	55	12	16	49	1	0
Second ,, ...	51	52	25	56	0	0
Third ,, ...	89	39	20	49	0	0
Fourth ,, ...	214	42	23	65	0	0
Total in 1889	409	145	84	219	1	0
1888.						
First Quarter	37	95	14	73	3	14
Second ,, ...	14	74	21	59	1	3
Third ,, ...	41	52	11	45	3	4
Fourth ,, ...	40	45	21	78	1	0
Total in 1888	132	266	67	255	8	21
1887.						
First Quarter	108	20	23	71	0	0
Second ,, ...	64	19	14	58	1	0
Third ,, ...	35	102	10	67	0	0
Fourth ,, ...	65	81	34	112	5	9
Total in 1887 ..	272	222	81	308	6	9
1886.						
First Quarter	253	14	5	71	1	0
Second ,, ...	145	26	11	53	3	1
Third ,, ...	219	45	9	63	3	0
Fourth ,, ...	200	56	26	71	5	0
Total in 1886	817	141	51	258	12	1

Compared with the former years during which notification has been in force (Table XI.), only in the years 1887 and 1888 was there a less number of Scarlet Fever attacks than this year. With regard to Typhoid Fever, it is seen that four years, *i.e.*, 1882, 1883, 1884, and 1886, shewed smaller numbers ; but it is to be remembered, in comparing the present with past years, that we have to deal with a larger population now than at any pre-

TABLE XI.

Reported Cases of Infectious Disease in each of the years 1879 to 1889 inclusive.

	Scarlet Fever.	Typhoid.	Erysipelas.	Diphtheria.	Small-pox.	Puerperal Fever.
*1879	496	56	125	24	0	
1880	802	245	442	87	0	6
1881	1065	179	566	63	5	15
1882	763	110	455	38	29	14
1883	797	85	317	26	12	12
1884	728	55	239	184	3	0
1885	1816	216	294	55	8	8
1886	817	141	258	51	1	12
1887	272	222	308	81	9	6
1888	132	266	255	67	21	8
1889	409	147	219	84	0	1

The numbers in 1883, 1882, 1881, and 1880, are *certificates* only, and may not include quite all the *cases*.

*N.B.—In this year the cases are only reckoned from September 13th to the end of 1879, this being the first day the act came into effect.

vious time. We may fairly hope that with all the large works recently done and in progress, this disease may diminish still further in the future. There have been a less number of persons reported as suffering from Erysipelas than in any previous year, though even now it is certain that there were not anything like 210 persons ill with severe attacks of Erysipelas: 50 per cent. of these might well be deducted as cases not deserving the name of Erysipelas at all.

Small Pox.—No death and no case of Small Pox occurred in the Borough last year. So clear a record of this disease has not been experienced since the year 1880 (see Table XI). No death has resulted from this disease since 1883. The country generally was unusually free from Small Pox during 1889. Six deaths only were recorded in the 28 large towns. In London there was one, in Portsmouth two, and in Liverpool, Manchester, Bradford, and Leeds, one each. Like ourselves, several of these large towns and cities were entirely free from Small Pox, no cases being met with in Derby, Huddersfield, Nottingham, Preston, Salford, and other places.

Scarlet Fever.—The records for this disease are not quite of so favourable a character as in the two preceding years. The increase during the autumn months has already been referred to (page 66). The number of cases arising has been 409, as compared with 132 and 272 in 1888 and 1887. The deaths of those attacked, fortunately, have been only six, a smaller proportion than in any former year, the death-rate per 100 of those attacked being less than 1·5. On the Map in the Appendix will be found marked in red the localities where these fatal cases resided.

Increase of Scarlet Fever.

In Table XII. it is shewn that the average number of deaths from Scarlet Fever during the ten preceding years has been 80, so that an enormous reduction on this annual loss of life has been experienced since 1887.

TABLE XII.

Shewing the number of Deaths from the principal Zymotic Diseases in the Ten Years 1879 to 1888, and in the Year 1889.

DISEASE.		1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	Annual Average of Ten Years, 1879-1888.	Proportion of Deaths to 1000 Deaths, in Ten Years 1879-88.	Total Deaths in 1889.	Proportion of Deaths to 1000 Deaths in 1889.
Small-pox		0	0	2	5	3	0	0	0	0	0	1·1	0·4	0	0
Measles		72	166	7	74	15	57	52	43	87	77	65·0	24·1	62	24·6
Scarlet Fever		105	119	184	72	91	63	113	44	5	4	80·0	29·6	6	2·3
Diphtheria		11	23	11	5	6	11	14	4	13	13	11·1	4·1	10	3·9
Whooping Cough		61	27	122	19	59	66	52	27	55	86	57·0	21·1	26	10·0
Fevers	Typhus	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Enteric	21	46	29	19	10	16	36	19	31	32	25·9	9·6	22	8·9
	Simple continued	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diarrhœa		88	398	193	214	148	344	186	256	247	148	222.2	82·4	221	87·9
Totals		358	779	548	408	332	557	453	393	438	360	462	171·0	347	138

There was a slight increase throughout the country at large in the mortality from Scarlet Fever, last year, whilst many of the large towns suffered very severely. Thus in Plymouth—a town only half the size of Leicester—265 deaths were caused by it; in Liverpool 352, in Sheffield 227, and in Salford 180.

Table XIII. continues that given in former years, shewing the deaths from this disease in each lunar month since the year 1879, and in Table XIV. is given the ages of all those persons who suffered from an attack during 1889, &c.

TABLE XIII.

Deaths from Scarlatina during each Lunar Month of the following Years.

Year.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	Total.
1879	0	1	4	1	4	2	1	7	13	20	15	19	20	107
1880	12	7	4	13	6	7	3	4	12	5	16	12	17	118
1881	12	6	9	6	7	11	18	18	31	24	19	19	12	192
1882	6	12	5	2	2	2	2	2	3	9	11	7	8	71
1883	4	2	3	3	8	7	6	3	5	5	12	15	18	91
1884	8	12	5	2	7	5	2	3	4	2	3	5	5	63
1885	2	10	5	6	3	9	4	14	9	15	10	10	16	113
1886	9	11	2	4	2	0	0	1	3	2	2	4	4	44
1887	2	0	1	2	0	0	0	0	0	0	0	0	0	5
1888	1	0	0	0	0	1	0	1	1	0	0	0	0	4
1889	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**1**	**6**

Typhoid Fever.—From Typhoid, or Enteric Fever, the Borough suffered much less than in 1888. The persons attacked by this disease were 147 in number, of whom 22 died. In the preceding year the numbers were 266 attacks and 32 deaths (see Tables XI. and XII.) The annual average of deaths during the past decade has been 25·9, so that with the increased population the past year's record is not unsatisfactory. Nothing that can in any way be designated an outbreak of this disease existed

Diminution of Typhoid Fever.

TABLE XIV.

Shewing Mortality and ages of persons suffering from Scarlet Fever.

	1889.			1888.			1887.		
	No. of Patients.	Deaths.	Death-rate per cent.	No. of Patients.	Deaths.	Death-rate per cent.	No. of Patients.	Deaths.	Death-rate per cent.
Under 1 year	3	0	0	3	0	0	10	0	0
1 to 2 years...........	12	0	0	5	0	0	16	1	6·2
2 to 3 ,, ...	31	0	0	7	3	42·8	33	0	0
3 to 4 ,, ...	43	2	4.6	19	1	5·2	37	2	5·4
4 to 5 ,, ...	54	2	3.7	16	0	0	40	1	2·5
5 to 6 ,, ...	42	1	2.3	14	0	0	33	1	3·0
6 to 7 ,, ...	42	1	2.3	18	0	0	16	0	0
7 to 8 ,, ...	35	0	0	7	0	0	13	0	0
8 to 9 ,, ...	23	0	0	9	0	0	9	0	0
9 to 10 ,, ...	25	0	0	6	0	0	9	0	0
Over 10 years..........	96	0	0	27	0	0	53	0	0
Ages not stated	2	0	0	1	0	0	3	0	0
Totals	408	6	1·5	132	4	3·0	272	5	1·8

during the year under review: the cases were distributed in all parts of the town, and with no special incidence in any part of the year. In the first quarter there were three deaths, in the second seven, in the third quarter five, and in the last quarter seven. This total of twenty-two is equal to a death-rate of 0·14 per 1000 of the population. In the twenty-eight large towns it was 0·20 per 1000, so that we are considerably below the average rate.

Number of Children ill with Measles not known.

Measles.—The number of children attacked by Measles cannot be stated: the deaths that have resulted were 62, being 15 less than in the year before. Table XIII. shews the average number of deaths yearly for the last ten years to have been 65, and they have varied from 166 in 1880 to only 7 in the following year.

In the twenty-eight large towns 6339 deaths were caused by Measles, of which 2314 were in London. The death-rate in these towns was 0·67 per 1000 of the population living, and was most fatal in Manchester, Bolton, Blackburn, and Preston. In Leicester the death-rate was 0·41 per 1000.

Over this disease, like that of Whooping Cough, a sanitary authority at present has but little control. Possibly an efficient system of isolation might be of service in combating the spread of it, but this would necessarily be a very costly business; and further, it presents very different aspects to Scarlet Fever, where prompt and strict isolation is undoubtedly an important means of controlling its spread. Measles differs from this in the fact that it is infectious some few days before the disease has actually declared itself; and further, the tender age of a large proportion of the sufferers, many of them under a year old, precludes the possibility of taking them into Hospital in any numbers. The same remarks apply equally to Whooping Cough, with the addition that in this latter we have to deal with a disease the duration of which is not infrequently measured by months.

Whooping Cough.—It is impossible to form any true estimate of the number of children who have had Whooping Cough, but only 26 deaths were caused by it, or less than one-half the average of the previous decade. Throughout the country the mortality from Whooping Cough was very low.

Diphtheria.—The number of cases of Diphtheria coming to the knowledge of your Officer of Health was 84, or an increase of 17 on the previous year, but the deaths were only 10, or 3 less than in 1888. This is equal to a rate of 0·6 per 1000. In the twenty-eight large towns the rate was 0·26 per 1000, the highest yet recorded.

Comparative freedom from Diphtheria in Leicester.

In many of these, notably London, the mortality from Diphtheria has steadily increased in recent years. Leicester is to be congratulated on its comparative freedom from this ailment, for of Diphtheria in the true clinical sense of the word but very few cases are ever met with, and cases followed by Paralysis and other serious sequelæ of severe attacks of this disease, are almost unknown in the town. The deaths were all of young children, and in most of these cases the disease appears to have been more of a croupous character than real Diphtheria.

Diarrhœa.—This disease has already been referred to at some length in the first part of this Report (page 18): a brief statement of the statistics only will here be given. 221 deaths were recorded from it, and corresponds to the average number of the past ten years (see Table XII). This is a considerable increase on the year 1888, which had a mortality much below the average. The death-rate per 1000 of the population was this year equal to 1·4. In the large towns of the country the rate was 0·82, so that as usual we were largely in excess, and, with the exception of Preston, had the highest mortality from this annual scourge. On the Map in the Appendix, the localities of the Borough in which these deaths occurred is shewn by a black cross.

High Mortality from Diarrhœa.

The number of persons to whom Diarrhœa medicine was supplied gratuitously by the Corporation was 7763, as against 4541 in the previous year.

Number and Ages of Patients suffering from Diarrhœa, in the Summer of 1889, to whom Medicine was supplied gratuitously.

Under 1 year	283	5 years to 6	125	10 years to 20	932
1 year to 2	509	6 ,, 7	75	20 ,, 60	3909
2 years to 3	419	7 ,, 8	98	Over 60 years	814
3 ,, 4	255	8 ,, 9	74		——
4 ,, 5	162	9 ,, 10	108	Total all ages	7763

The above Table again exemplifies the truth of what has been so often stated, that this disease is by no means confined to young children and infants, but that the greater number of persons suffering are over 10 years of age, and it is the infants who are killed by it.

Erysipelas trivial in character.

Erysipelas.—Five deaths only were registered as due to Erysipelas, out of the 219 cases which were notified to the Health Department. This fact alone is sufficient commentary on the trivial character of a large number of these so-called cases of Erysipelas. Whenever opportunity occurs, this disease should be removed from the list of those to be notified, being unnecessary expense, with but little or no benefit accruing therefrom.

The only other deaths in the zymotic group were, one from Dysentery, twelve from Syphilis (ten of which were congenital in infants), six from Septicæmia, or blood poisoning, and one from Puerperal Fever: this latter being the only case of Puerperal Fever notified during the year.

CLASSES II. and III.—Parasitic and Dietic Diseases.

The deaths in these two groups are so small and insignificant in number as to have but little interest from a statistical point of view. Two deaths from Parasitic Disease were the only ones recorded. No death was attributed to either starvation or excessive use of alcohol, though a large number of those returned under other heads would be more legitimately classed under this heading.

CLASS IV.—Constitutional Disease.

Phthisis Deaths.

A slight decrease is shewn in the deaths from Constitutional Diseases—329 against 332 in the previous year. As usual, Phthisis accounts for 50 per cent. of these, whilst various kinds of Cancer caused one-third of them.

Information respecting Cancer.

It was mentioned in last year's Report that the members of the medical profession had been asked to supply fuller information respecting the deaths from Cancer, especially as to the organ or part of the body affected. A considerable improvement has resulted from this appeal, but it still not infrequently happens that the simple statement "Cancer," or "Malignant Disease," is used in certifying the cause of death. The Officer of Health would again appeal to all medical men to furnish, as far as possible, the nature of the Cancer and the part or parts affected. From the information so far obtained, it appears that of these fatal cases from cancerous disease 32 were males and 46 females. There was only one death under 20 years of age, six between 20 and 40 years, thirty-eight of persons aged 40 to 60 years (of whom 25 were women and only 13 men), thirty-two were persons aged 60 to 80, and three were over 80 years of age.

Deaths from Cancer.

These figures are too small to attempt to work out any general conclusions upon, but the subject, so far as Leicester is concerned, will not be lost sight of, and possibly, with more complete statistics as to occupation, habits, &c., &c., some little light may be thrown upon the causes apparently producing an increased mortality from this form of disease. Seeing how terribly fatal a disease it is, and how little amenable to treatment, it is to be hoped that a more extended enquiry, or at least a more complete record and description, will be made for the whole country, in order that whatever light may be thrown upon its etiology and origin shall not be lost.

Already the Registrar-General for Ireland has done something of the kind for Ireland, and in the reports 1887 and 1888 the statistics furnish the most complete records of deaths from Cancer that have ever yet been available. Similar statistics for England and for Scotland are much to be desired.

The other diseases included in this group, and the deaths caused thereby, will be found in the Mortality Tables in the Appendix.

CLASS V.—Local Diseases.

The various sub-divisions included in Class V., or local diseases, are :—Diseases of the nervous system, disease of organs of circulation, diseases of respiratory organs, of digestive organs, of urinary organs, diseases of the reproductive system, the integumentary system, diseases of bones and joints, and organs of special sense, &c. From the whole of these 1198 deaths resulted, the nervous system, the organs of circulation, and the respiratory organs, contributing the most largely. The whole of these, fully set out in detail, are to be found in the Mortality Tables in the Appendix.

In Table XV. is given the deaths, with the rate per 1000 deaths, &c., of some of the principal of these sub-divisions; whilst in Table XVI. is shewn the incidence of some of them upon the different wards of the Borough, amongst which, as is annually the case, Middle Margaret's, East Margaret's, and West Mary's, have the highest mortality, being the poorest and most densely populated wards of the town.

TABLE XV.

Shewing the Deaths at all ages during 1889, from certain groups of Diseases, and proportion to 1000 of population, and to 1000 Deaths from all causes; also the number of Deaths of Infants under one year of age, from other groups of Diseases, and proportion to 1000 Births, &c.

DIVISION I. (All ages.)	Total Deaths.	Deaths per 1000 of Population at all ages.	Deaths per 1000 of Total Deaths at all ages.
1. Zymotic Diseases	372	2·4	148
2. Pulmonary or Respiratory Diseases (Excluding Phthisis)	405	2·6	161
3. Principal Tubercular Diseases .. (Including Phthisis.)	214	1·4	85
DIVISION II. (Infants under one year.)	**Total Deaths.**	**Deaths per 1000 of Births.**	**Deaths per 1000 of Total Deaths under 1 year.**
4. Wasting Diseases .. .. .. (Including Tabes Mesenterica)	206	43·0	205
5. Convulsive Diseases	198	41·3	197

TABLE XVI.

Distribution, in the different Wards, of Deaths from six important groups of disease during 1889.

	Six chief Zymotic diseases.	Diarrhœa	Devel-opm'l.	Acute Resp'raty	Phthisis	Convul-sions.
1. St. Martin's Ward	0	0	4	4	1	0
2. N. Margaret's ,,	20	39	63	49	24	25
3. M. ,, ,,	37	62	116	109	43	67
4. E. ,, ,,	30	52	149	118	60	57
5. E. Mary's ,,	3	4	20	11	7	4
6. W. ,, ,,	17	41	100	61	29	21
7. All Saints' ,,	17	24	48	45	13	54

N.B.—The mortality of the fourth, or East St. Margaret's Ward, is a little over-stated, as owing to the absence of the necessary information, the deaths in the workhouse, which is situate in this Ward, cannot be distributed to the districts from whence the patients came.

CLASS VI.—Developmental Diseases.

502 deaths occurred in this group, of which 101 were due to Premature Birth, 173 to Old Age, and 208 to Atrophy and Debility. These latter are perhaps the most unsatisfactory of all the deaths that have to be recorded, seeing that so large a proportion might, with greater care in the rearing of infants, be prevented. Of the 208, no less than 192 were under a year old. In Table XV., Division II., of the 206 deaths from "wasting diseases" these 192 are included, and these alone cause one-fifth of all the infantile deaths.

In Table XVI. the distribution in the wards of the Borough of these deaths from developmental diseases is given.

CLASS VII.—Deaths from Violence.

With the increase of population, death from violence necessarily also increases. Last year 83 deaths were thus accounted for, as against 77 in the preceding year. These were made up as follows:—Fractures and Contusions 26, Burns and Scalds 10, by Poison 7, by Drowning 16, and from Suffocation 17. Seven deaths were returned as suicidal. Of the seventeen deaths from suffocation, *fifteen were infants under a year old.*

CLASS VIII.—Ill-defined and Unspecified Causes.

The number of these deaths was 27, the causes given being too vague or uncertain to enable them to be classified with any of the preceding groups, such as Dropsy, Hæmorrhage, Tumour, &c.

Inquests and Uncertified Deaths.

High percentage of Inquests and Low Rate of Uncertified Deaths.

The inquests held were 247, of which 153 were males and 94 females: the uncertified deaths were only 54. The percentage of inquests held to total deaths was 9·8: the previous year it was 11·2. The uncertified deaths were 2·1 per cent. of all deaths. As usual, Leicester shews a high percentage of inquests and a low rate of uncertified deaths. The towns with the highest rate of uncertified deaths were Halifax and Liverpool, where it reached 5·6 per cent. of all the deaths.

APPENDIX.

ANALYST'S REPORT.

LOCALITIES OF DEATHS FROM ZYMOTIC DISEASES.

MORTALITY TABLES.

MAP.

REPORT OF ANALYST.

Borough Analyst's Laboratory,
Town Hall, Leicester,
26th March, 1890.

To the Sanitary Committee.

Gentlemen,

I beg to submit for your approval the report of my work during the past year as Public Analyst. 177 articles of food, &c., have been examined and reported on by me, in addition to 29 analyses of water.

TABLE I.

Articles of Food, &c., analysed under the provisions of the "Sale of Food and Drugs Act" during the year 1889.

Commodity Analyzed.	Number of Samples obtained.	Number of Genuine Samples.	Number of Adulterations.	Remarks.
Milk	108	98	10	Two prosecutions: fines 40/- and costs, and 10/- and costs were inflicted. Other offenders cautioned by Sanitary Committee.
Butter	14	9	5	Five prosecutions: fines of 20/-, 20/-, 20/-, £5, and £7 with costs were inflicted.
Spirits	6	4	2	One prosecution: £3 and costs inflicted.
Olive Oil	4	2	2	Offenders cautioned.
Bread	6	6	0	
Lard	6	6	0	
Tinned Salmon	1	1	0	
Beer	6	6	0	
Vinegar......	6	6	0	
Arrowroot ..	5	5	0	
Margarine....	2	2	0	Two prosecutions for infringement of Margarine Act, fines inflicted of 40/- and £5 with costs.
Cream	1	1	0	
Coffee	6	6	0	
Flour........	6	6	0	
Total	177	158	19	

Table I. gives the details of these, with the number of samples found to be adulterated or tampered with. As usual, milk has occupied the largest share of attention, and speaking generally, the quality of this is fairly well maintained. In those cases where it had evidently been tampered with to a small extent only, the offenders were brought before the Sanitary Committee and cautioned. Two prosecutions were instituted, and fines of 40s. and 10s., with costs, imposed. In one instance the sample obtained was of so rich a quality as to approach the character of cream rather than milk; but on a subsequent occasion the same dealer's milk was so bad that a prosecution was successfully undertaken against him.

Of the fourteen samples of butter obtained, five proved to be mixtures of margarine, and substantial fines were inflicted upon the worst offenders. Two prosecutions were taken under the Margarine Act, and fines of £5 and £2, with costs, imposed.

Of the samples of spirits submitted to me, two of gin were found diluted with water below the legal standard. The worst case was proceeded against, and a fine of £3 inflicted.

Complaints were received during the year of the quality of some olive oil sold in the Borough. As this is used to some extent for culinary purposes, samples were obtained, and one-half of these were found to be adulterated with cotton seed oil. As this was the first occasion upon which olive oil had been obtained for analysis, the offenders were cautioned only, and not sent before the justices.

Of the remaining articles of food, none were found adulterated.

It is satisfactory to find that, at the present time, comparatively little tampering with, or adulteration of, groceries appears to be carried on. The heavy penalties inflicted in the previous year, for selling adulterated lard, seem to have had a salutary effect.

In Table II. is given the number of samples analyzed, and the percentages of adulterations, during the last nine years.

TABLE II.

Number of Samples Analyzed, and proportion of Adulterated Articles in 1889, and in the Eight previous years.

Year.	Number of Samples Analyzed	Number of Samples Adulterated.	Per centage of Samples Adulterated.	Number of Prosecutions.	Per Centage of Adulterated Samples in the following Articles.			
					Milk.	Butter.	Spirits.	Groceries
1889	**178**	**19**	**10·7**	**10**	**9·2**	**35·7**	**33·3**	**13·3**
1888	162	17	10·4	10	9·5	11·7	50·0	16·0
1887	146	16	11·0	10	10·8	13·3	75·0	6·6
1886	168	25	14·8	9	17·4	17·6	20·0	28·4
1885	87	0	0·0	0	0·0	0·0	0·0	0·0
1884	96	4	4·2	4	6·4	0·0	22·2	0·0
1883	138	10	7·2	4	8·9	0·0	22·2	17·6
1882	130	1	0·8	1	0·0	0·0	0·0	25·0
1881	131	7	5·3	6	12·0	0·0	0·0	10·0

WATER ANALYSIS.

Twenty-nine samples of water have been brought to me for analysis, of which sixteen were from wells within the town and thirteen from the Corporation Water Works mains.

Of the well waters, six were found to be polluted, and upon my report the wells were ordered to be closed, and Corporation water supply laid on.

The water supplied from the Corporation mains has, on the whole, been of a satisfactory character. During the summer months, when vegetation is active, there was, as has often happened under similar conditions, an increase of albumenoid ammonia, due to the presence of vegetable matter; and from the same cause the water acquired a somewhat dirty colour when seen in large bulk. The water from the Thornton reservoir was worse than that from Cropstone.

Constant attention to the reservoirs, and very efficient filtration, are the only means to deal with this difficulty, which always presents itself in connection with water obtained from a watershed containing a large and active vegetation, and in parts under cultivation.

I am, Gentlemen,
Yours obediently,
HY. TOMKINS, B.Sc., &c.,
Public Analyst.

Localities of Deaths from the principal Zymotic Diseases during the year ending 31st December, 1889. Arranged into Wards.

DIARRHŒA.

WARD I.

Nil.

WARD II.

	No. of Deaths.
Abbey Street ..	1
Bay Street	1
Belgrave Gate ..	9
Burfield Street ..	2
Birkeley Street ..	1
Caroline Street ..	1
Charlotte Street ..	2
Crab Street	1
Friday Street ..	1
Gas Street	1
Gravel Street ..	1
Harcourt Street ..	1
Leadenhall Street ..	1
Lower Garden Street	1
Navigation Street ..	1
Needle Gate	1
New Lane	1
Northgate Street ..	2
Paradise Row ..	1
Pares' Street ..	1
Royal East Street ..	1
Sandacre Street ..	2
Sanvey Gate ..	2
Spitalhouse Street ..	3
St. John Street ..	1
St. Margaret Street	1
Watling Street ..	1
Total	42

WARD III.

	No. of Deaths.
Argyle Street ..	2
Bardolph Street ..	3
Bedford Street ..	1
Birstall Street ..	5
Brandon Street ..	2
Britannia Street ..	1
Brook Street ..	1
Brunswick Street (U)	1
Catherine Street ..	1
Chester Street ..	4
Clarence Street ..	1
Cobden Street ..	2
Crab Street ..	1
Crafton Street ..	1
Cranbourne Street ..	2
Curzon Street ..	3
Denman Street ..	2
Dorset Street ..	2
Eaton Street ..	2
Gresham Street ..	4
Harrington Street ..	1
Lead Street	1
Lewin Street ..	2
Liggins Street ..	1
Maxfield Street ..	1
Metcalfe Street ..	1
Palmerston Street ..	3
Providence Place ..	2
Russell Street ..	2
Syston Street ..	3
Willow Bridge Road	1
Willow Street, Lowr.	2
Woodboy Street ..	2
Total	63

WARD IV.

	No. of Deaths.
Bartholomew Street	1
Biddulph Street ..	2
Churchill Street ..	1
Clipstone Street ..	2
Diseworth Street ..	2
Donnington Street ..	1
East Goscote Street	1
Forest Road ..	1
Gotha Street ..	1
Guthlaxton Street ..	3
Halford Street ..	1
Highfield Street ..	1
Humberstone Gate ..	2
Lonsdale Street ..	1
Lower Grove Street	1
Mere Road	1
Mount Street ..	1
Myrtle Road ..	1
Newby Street ..	1
Northampton Street	1
Onslow Street ..	1
Oxendon Street ..	1
Shenton Street ..	1
Sherrard Street ..	1
Stoughton Street ..	1
Twycross Street ..	1
Union	10
Upper Conduit Street	1
Upper Kent Street ..	1
Walter Street ..	1
William Street ..	1
Worthington Street	1
Total	47

WARD V.

	No. of Deaths.
Albion Hill	2
Calais Place	1
East Street	1
Park Street	1
Total	5

WARD VI.

	No. of Deaths.
Bonner's Lane ..	1
Braunstone Gate ..	1
Catesby Street ..	1
Corah Street ..	1
Dannett Street ..	3
Foxon Street ..	1
Grange Lane ..	4
Havelock Street ..	1
Hinckley Road ..	1
Kent Street	1
King Richard's Rd.	1
Knighton Street ..	1

DIARRHŒA (continued.)

	No. of Deaths.
Laxton Street	1
Little Holme Street	1
Mill Lane	1
New Bridge Street	2
New Park Street	2
Noble Street	1
Oxford Street	4
Thorpe Street	1
Trinity Hospital	1
Tyndale Street	2
Victoria Street	1
Welford Road	2
West Bridge Street	1
West Holme Street	8
Total	39

WARD VII.

	No. of Deaths.
All Saints' Road	1
Bradgate Street	1
Brown Street	1
Diamond Street	1
Emerald Street	1
Friars' Causeway	3
Fuller Street	1
Jewry Wall Street	1
Nicholas Street	2
Northgate Street	4
Olive Street	1
Pingle Street	1
Redcross Street	2
Ruding Street	2
Warrington Street	2
Woodgate	1
Total	25

TOTALS.

	No. of Deaths.
Ward I.	0
Ward II.	42
Ward III.	63
Ward IV.	47
Ward V.	5
Ward VI.	39
Ward VII.	25
Total	221

MEASLES.

WARD I.

Nil.

WARD II.

Foundry Square	1
Garfield Street	1
Mansfield Street	1
Navigation Street	2
New Lane	1
Northgate Street	2
Pasture Lane	1
Sanvey Gate	2
Westbourne Street	1
Total	12

WARD III.

Bedford Street	2
Chester Street	1
Cobden Street	1
Fleet Street	1
Gresham Street	4
Lord Street	1
Brunswick Street (Upper)	1
Upper Hill Street	1
Total	12

WARD IV.

College Avenue	1
Donnington Street	1
East Goscote Street	1
Elm Street	1
Gordon Street	1
Rosslyn Street	1
Shenton Street	1
Southampton Street	1
St. James' Place	1
Thomas Street	1
Twycross Street	1
Union	5
Total	16

WARD V.

Chatham Street	1
Total	1

WARD VI.

Goswell Street	1
Knighton Street	2
Poplar Avenue	1
New Bridge Street	1
Total	5

WARD VII.

All Saints' Road	3
Elbow Lane	1
Grundon Street	1
Harding Street	1
Holy Bones	1
Littleton Street	1
Northumberland St.	1
Olive Street	1
Opal Street	1
Sarah Street	2
St. Nicholas Square	1
Warrington Street	2
Total	16

TOTALS.

Ward I.	0
Ward II.	12
Ward III.	12
Ward IV.	16
Ward V.	1
Ward VI.	5
Ward VII.	16
Total	62

WHOOPING COUGH.

No. of Deaths.

WARD I.

Nil.

WARD II.

	No. of Deaths.
Archdeacon Lane	2
Belgrave Gate	1
Sandacre Street	1
Thames Street	1
Total	5

WARD III.

	No. of Deaths.
Benford Street	1
Birstall Street	3
Curzon Street	2
Erskine Street	1
Gladstone Street	1
Humberstone Road	2
Maxfield Street	1
Total	11

WARD IV.

	No. of Deaths.
Colton Street	1
Edwyn Street	1
Kent Street	1
Total	3

WARD V.

	No. of Deaths.
York Street	1
Total	1

WARD VI.

	No. of Deaths.
Corah Street	1
Laxton Street	1
Magazine Square	1
New Park Street	1
Outram Street	2
Total	6

WARD VII.

Nil.

TOTALS.

	No. of Deaths.
Ward I.	0
Ward II.	5
Ward III.	11
Ward IV.	3
Ward V.	1
Ward VI.	6
Ward VII.	0
Total	26

SCARLET FEVER.

WARD I.

Nil.

WARD II.

Crane Street	1
Total	1

WARD III.

Arnold Street	1
Curzon Street	1
Dorset Street	1
Total	3

WARD IV.

College Avenue	1
Waring Street	1
Total	2

WARD V.

Nil.

WARD VI.

Nil.

WARD VII.

Nil.

TOTALS.

Ward I.	0
Ward II.	1
Ward III.	3
Ward IV.	2
Ward V.	0
Ward VI.	0
Ward VII.	0
Total	6

DIPHTHERIA.

WARD I.

	No of Deaths.
Nil.	

WARD II.

Nil.

WARD III.

Catherine Street ..	1
Curzon Street ..	1
Gresham Street ..	2
Total	4

WARD IV.

	No. of Deaths.
Highfield Street ..	1
Preston Street ..	1
Swaffham Street ..	2
Upper Kent Street ..	1
Total	5

WARD V.

Nil.

WARD VI.

Winifred Street ..	1
Total	1

WARD VII.

	No. of Deaths.
Nil.	

TOTALS.

Ward I. ..	0
Ward II. ..	0
Ward III. ..	4
Ward IV. ..	5
Ward V. ..	0
Ward VI. ..	1
Ward VII. ..	0
Total	10

TYPHOID FEVER.

WARD I.

Nil.

WARD II.

Abbey Park Road ..	2
Bay Street	1
Queen Street ..	1
Total	4

WARD III.

Birstall Street ..	2
Cranbourne Street ..	1
Curzon Street ..	1
Martin Street ..	1
Syston Street ..	1
Total	6

WARD IV.

Humberstone Road	1
Laurel Road ..	1
Southampton Street	1
Total	3

WARD V.

Dover Street ..	1
Total	1

WARD VI.

Braunstone Gate ..	1
Coventry Street ..	2
Sherrard Street ..	1
Laxton Street ..	1
Total	5

WARD VII.

Abbey Gate ..	1
All Saints' Road ..	1
Sanvey Gate ..	1
Total	3

TOTALS.

Ward I. ..	0
Ward II. ..	4
Ward III. ..	6
Ward IV. ..	3
Ward V. ..	1
Ward VI. ..	5
Ward VII. ..	3
Total	22

MORTALITY TABLES.

Deaths Registered in the Borough of Leicester during the fifty-two weeks ending Dec. 29, 1889.

NOTE.—The deaths of non-residents occurring in Public Institutions situated in the Borough are excluded, and the deaths of residents occurring in Public Institutions beyond the limits of the Borough are included.

	0 to 1		1 to 5		Under 5		5—20		20—40		40—60		60—80		80 and upwards.		Over 5		All Ages		Total.
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Class I.																					
SPECIFIC FEBRILE OR ZYMOTIC DISEASES.																					
1.—Miasmatic Diseases.																					
Small-pox — Vaccinated	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Small-pox — Unvaccinated	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Small-pox — Not known	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Small-pox — Not stated	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Measles	7	9	27	16	34	25	1	2	..	..	..	..	..	..	..	..	1	2	35	27	62
Scarlet Fever	..	..	3	1	3	1	1	1	..	..	..	..	..	..	..	..	1	1	4	2	6
Diphtheria	..	..	5	5	5	5	..	..	..	..	..	..	..	..	..	..	..	..	5	5	10
Whooping Cough	5	5	3	13	8	18	..	..	..	..	..	..	..	..	..	..	..	..	8	18	26
Typhus Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric or Typhoid Fever	..	..	1	1	1	1	5	8	..	5	2	..	..	..	..	..	7	13	8	14	22
Simple Continued Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Miasmatic Diseases	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2.—Diarrhœal Diseases.																					
Dysentery	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	1
Diarrhœa	100	90	5	8	105	98	..	..	..	1	3	..	6	3	4	1	13	5	118	103	221
Cholera	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3.—Malarial Diseases.																					
Ague	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Remittent Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4.—Zoogenous Diseases.																					
Cowpox and Effects of Vaccination	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydrophobia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Glanders	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Splenic Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

5.—Venereal Diseases.																					
Syphilis	4	6	..	..	4	6	..	..	..	..	1	1	..	..	..	..	1	1	5	7	12
Gonorrhœa, Stricture of Urethra	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6.—Septic Diseases.																					
Erysipelas	..	1	..	1	..	2	..	..	..	1	1	..	..	1	..	..	1	2	1	4	5
Pyæmia, Septicæmia	2	..	1	..	3	..	1	..	1	1	..	..	..	..	..	..	2	1	5	1	6
Puerperal Fever	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	1
Class II.	118	111	45	45	163	156	8	11	1	9	8	1	6	4	4	1	27	26	190	182	372
PARASITIC DISEASES.																					
Thrush and other Vegetable Parasitic Diseases	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2
Worms, Hydatids, and other Animal Parasitic Diseases	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Class III.	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2
DIETIC DISEASES.																					
Want of Breast Milk, Starvation	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Purpura and Scurvy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Alcoholism { *a* Del. Tremens..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Alcoholism { *b* Intemperance	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Class IV.																					
CONSTITUTIONAL DISEASES.																					
Rheumatic Fever	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	1
Rheumatism	..	..	1	..	1	..	..	..	..	..	..	1	1	3	..	..	1	4	2	4	6
Gout	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cancer, Malignant Disease	..	..	..	..	..	..	1	..	2	4	13	25	14	18	2	1	32	46	32	46	78
Cancrum Oris (Noma)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rickets	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Tabes Mesenterica	7	7	3	2	10	9	1	1	..	..	..	..	..	..	..	..	1	1	11	10	21
Phthisis	1	..	2	1	3	1	9	11	59	43	26	18	4	4	..	..	98	76	101	77	178

DEATHS (continued).

	0 to 1		1 to 5		Under 5		5—20		20—40		40—60		60—80		80 and upwards.		Over 5		All ages.		Total.
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Hydrocephalus and Tubercular Meningitis	5	1	4	1	9	2	1	1	..	..	..	..	..	..	..	..	1	1	10	3	13
Other forms of Tuberculosis	3	4	3	2	6	6	1	2	4	1	2	1	..	..	..	..	7	4	13	10	23
Scrofula	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Anæmia, Chlorosis, Leucocythæmia ..	..	1	..	..	..	1	..	..	1	..	2	1	..	1	..	..	3	2	3	3	6
Diabetes	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	1
Other Constitutional Diseases	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	1
	16	14	13	6	29	20	14	15	67	48	44	44	19	26	2	1	146	134	175	154	329
Class V.																					
LOCAL DISEASES.																					
1.—Diseases of Nervous System.																					
Inflammation of Brain or Membranes ..	11	14	9	5	20	19	6	2	1	2	.	..	..	..	..	..	7	4	27	23	50
Apoplexy, Softening of Brain, Paralysis	..	..	..	..	..	..	..	..	4	1	21	16	23	30	5	5	53	52	53	52	105
Insanity, General Paralysis of Insane ..	..	..	..	..	..	..	..	..	4	..	3	2	..	1	..	..	7	3	7	3	10
Chorea	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Epilepsy	..	..	..	..	..	..	..	..	..	2	2	2	..	..	..	..	2	4	2	4	6
Convulsions	116	82	17	14	133	96	..	..	..	..	..	..	..	..	..	..	..	..	133	96	229
Laryngismus Stridulus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Disease of Spinal Cord, Paraplegia, Paralysis Agitans	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	1	1	1	2
Other Diseases of Nervous System	1	1	..	..	1	1	1	..	..	..	..	..	..	..	..	1	1	1	2	2	4
2.—Diseases of Organs of Circulation.																					
Pericarditis and Endocarditis	..	..	1	..	1	..	1	1	2	..	..	..	..	..	..	..	3	1	4	1	5
Heart Disease	1	1	1	1	2	2	5	5	16	12	30	33	32	32	..	..	83	82	85	84	169
Aneurism	..	..	..	..	..	..	..	..	1	..	1	..	1	1	..	..	3	1	3	1	4
Embolism, Thrombosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	1
Other Diseases of Blood Vessels	1	..	..	1	1	1	..	..	..	1	2	..	3	3	..	1	5	5	6	6	12
3.-Diseases of Respiratory Organs																					
Laryngitis	3	1	1	..	4	1	1	1	..	1	..	..	1	..	..	..	2	2	6	3	9
Bronchitis	66	31	31	28	97	59	..	1	..	4	16	14	33	34	1	4	53	54	150	113	263
Pleurisy	..	..	..	1	..	1	..	1	..	..	1	..	1	..	..	..	2	1	2	2	4

Pneumonia	18	9	12	12	30	21	5	3	8	8	9	6	6	7	..	..	28	24	58	45	103
Asthma and Emphysema	..	..	..	1	..	1	..	..	..	..	1	..	..	3	..	..	1	3	1	4	5
Croup	2	3	1	2	3	5	1	1	..	..	..	..	..	..	..	..	1	1	4	6	10
Other diseases of Respiratory Organs	1	2	1	2	2	4	..	..	1	..	2	2	..	..	..	..	3	2	5	6	11
4.—Diseases of Digestive Organs.																					
Gastritis	3	3	..	..	3	3	..	..	..	..	1	2	..	2	..	..	1	4	4	7	11
Other Diseases of the Stomach	3	1	..	..	3	1	..	1	..	..	2	6	..	..	..	..	2	7	5	8	13
Enteritis	1	4	..	1	1	5	1	1	..	1	..	2	1	3	..	..	2	7	3	12	15
Peritonitis	1	..	2	..	3	..	2	1	..	5	1	2	..	..	..	..	3	8	6	8	14
Ascites	..	..	..	..	..	..	..	..	..	1	..	1	..		..	..	..	2	..	2	2
Obstructive Diseases of Intestines	1	2	..	..	1	2	1	..	1	1	1	2	4	6	..	..	7	9	8	11	19
Fistula	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
Pancreas Disease, &c.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cirrhosis of Liver	..	..	..	..	..	..	..	..	1	..	5	5	1	1	..	..	7	6	7	6	13
Jaundice, and other Diseases of Liver	2	1	..	..	2	1	..	..	1	2	4	4	4	3	..	..	9	9	11	10	21
5.—Diseases of Urinary Organs.																					
Nephritis	..	..	..	1	..	1	3	2	1	..	4	1	2	..	..	..	10	3	10	4	14
Bright's Disease (Albuminuria)	..	..	1	1	1	1	2	1	3	..	7	5	1	2	..	..	13	8	14	9	23
Diseases of Bladder or Prostrate	..	..	..	..	..	..	..	..	..	..	..	..	8	..	..	..	8	..	8	..	8
Calculus (Stone)	..	..	1	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	2	..	2
Other Diseases of Urinary System	..	..	..	..	..	..	..	..	..	4	1	1	..	..	..	..	1	5	1	5	6
6.—Diseases of Reproductive System.																					
(*a*) ORGANS OF GENERATION.																					
Male Organs	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	1
Female Organs	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	3	..	3	3
(*b*) OF PARTURITION.																					
Abortion, Miscarriage	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	...	..	1	..	1	1
Puerperal Convulsions	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	..	2	2
Placenta Prævia, Flooding	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	3	..	3	3
Other Accidents of Childbirth	..	..	..	..	..	..	..	1	..	7	..	..	..	..	..	..	..	8	..	8	8

DEATHS (continued).

	0 to 1		1 to 5		Under 5		5—20		20—40		40—60		60—80		80 and upwards.		Over 5		All ages.		Total.
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
7.—Diseases of Integumentary System.																					
Phlegmon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ulcer, Carbuncle	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Diseases of Skin, &c.	..	2	..	..	..	2	..	..	..	..	..	1	..	..	..	..	..	1	..	3	3
8.—Diseases of Bones and Joints.																					
Caries and Necrosis	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	1
Arthritis, Ostitis, Periostitis	..	..	..	..	..	..	1	..	..	1	2	..	..	..	..	..	3	1	3	1	4
Other Diseases of Bones and Joints	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	1	1	1	2
9.—Diseases of Organs of Special Sense.																					
Ear, Eye, Nose	..	..	..	1	..	1	..	1	..	..	..	1	..	..	..	..	..	2	..	3	3
10.—Diseases of Lymphatic System, &c.																					
Lymphatics and Spleen	..	..	1	..	1	..	1	..	..	..	1	..	.	..	..	..	2	..	3	..	3
Bronchocele, Addison's Disease	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Quinsy	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	1
	231	157	79	71	310	228	32	26	45	59	128	110	121	129	10	9	327	333	637	561	1198
Class VI.																					
DEVELOPMENTAL DISEASES.																					
Premature Birth	61	40	..	..	61	40	..	..	..	..	..	..	..	..	..	..	..	..	61	40	101
Atelectasis	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Congenital Malformations	4	3	..	..	4	3	..	..	..	..	..	..	..	..	..	..	..	..	4	3	7
Teething	3	4	2	3	5	7	..	..	..	..	..	..	..	..	..	..	..	..	5	7	12
Atrophy, Inanition, Debility	117	75	5	9	122	84	..	1	..	..	..	1	..	..	..	..	..	2	122	86	208
Old Age	..	..	..	..	..	..	..	..	..	..	..	1	55	49	22	46	77	96	77	96	173
	186	122	7	12	193	134	..	1	..	..	..	2	55	49	22	46	77	98	270	232	502

Class VII.																					
DEATHS FROM VIOLENCE.																					
1.—Accident or Negligence.																					
Fracture and Contusions	3	1	2	2	5	3	1	..	7	..	1	3	3	2	..	1	12	8	17	9	26
Gunshot Wounds	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cut, Stab	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burns and Scalds	..	1	3	1	3	2	..	..	..	..	2	..	..	..	..	1	3	2	6	4	10
Poison	..	1	1	..	1	1	..	..	3	2	..	..	..	..	..	..	3	2	4	3	7
Drowning	..	..	1	1	1	1	9	..	1	2	1	..	1	..	..	..	12	2	13	3	16
Suffocation	8	7	2	..	10	7	..	..	..	..	..	..	..	..	..	..	..	..	10	7	17
Otherwise	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2.—Homicide.																					
Manslaughter	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Murder	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	..	..	..	..
3.—Suicide.	..	..	..	..	..	..	..	..	1	..	4	1	1	..	..	..	6	1	6	1	7
	11	10	9	4	20	14	11	1	12	4	8	4	5	2	..	2	36	13	56	27	83
Class VIII.																					
DEATHS FROM ILL-DEFINED AND NOT SPECIFIED CAUSES.																					
(*e.g.*, Dropsy, Abscess, Tumour, Hæmorrhage, Mortification, Death from Natural Causes, &c.)	3	3	..	1	3	4	2	1	2	..	4	5	4	1	..	1	12	8	15	12	27
Class I. Zymotic diseases	118	111	45	45	163	150	8	11	1	9	8	1	6	4	4	1	27	26	190	182	372
,, II. Parasitic Diseases ..	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2
,, III. Dietic diseases	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
,, IV. Constitutional diseases	16	14	13	6	29	20	14	15	67	48	44	14	19	26	2	1	146	134	175	154	329
,, V. Local diseases	231	157	79	71	310	228	32	26	45	59	128	110	121	129	10	9	327	333	637	561	1198
,, VI. Developmental diseases	186	122	7	12	193	134	..	1	..	..	..	2	55	49	22	46	77	98	270	232	502
,, VII. Violent deaths	11	10	9	4	20	14	11	1	12	4	8	4	5	2	..	2	36	13	56	27	83
,, VIII. Ill-Defined, &c.	3	3	..	1	3	4	2	1	2	..	4	5	4	1	..	1	12	8	15	12	27
Totals	586	418	153	139	719	557	67	55	127	120	192	166	210	211	38	49	625	612	1344	1169	2513

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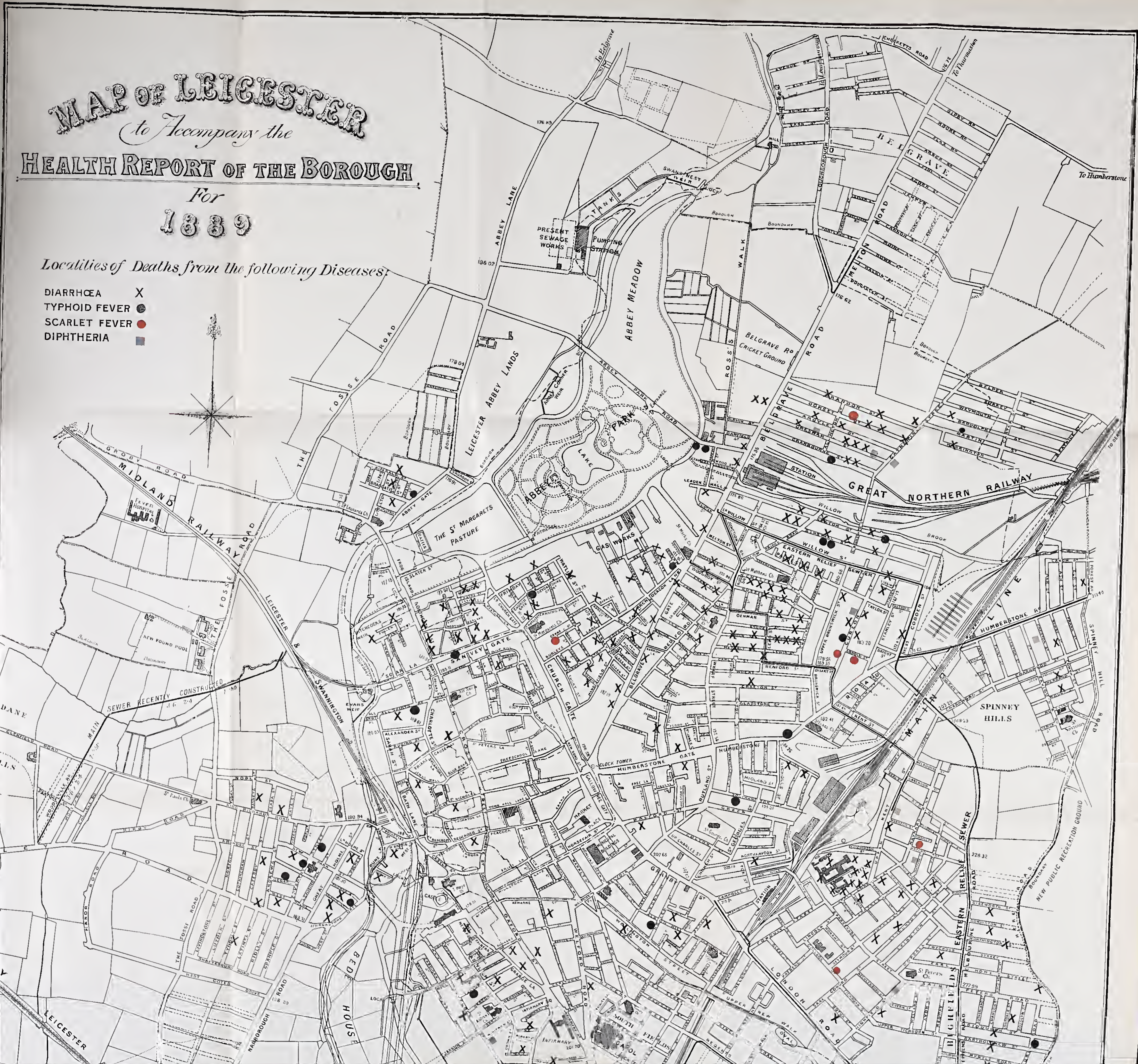
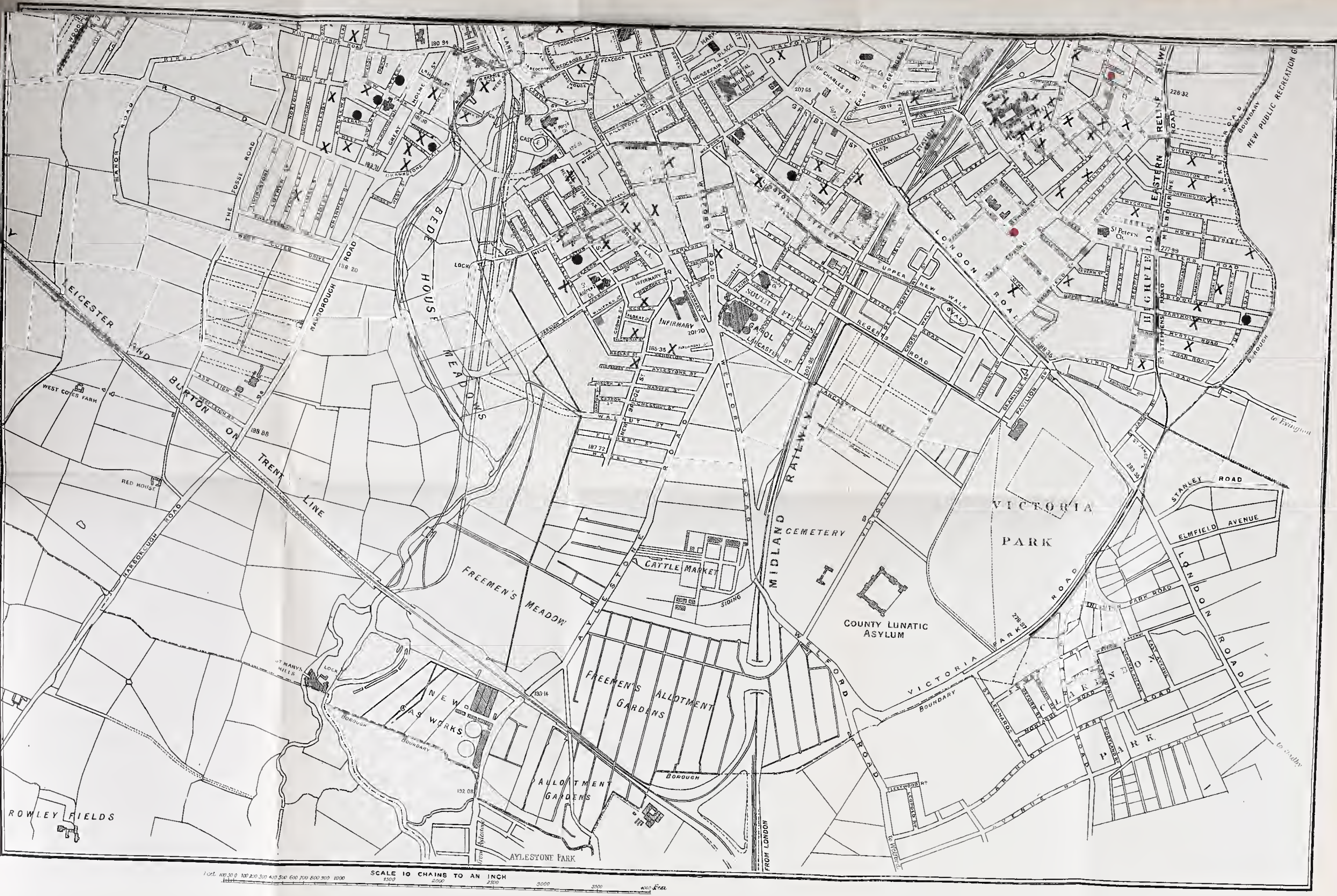


MAP OF LEICESTER
to Accompany the
HEALTH REPORT OF THE BOROUGH
For
1889

Localities of Deaths from the following Diseases:

- DIARRHŒA X
- TYPHOID FEVER ●
- SCARLET FEVER 🔴
- DIPHTHERIA ■


KING RICHARDS ROAD
ROAD
MANOR ROAD
THE FOSSE ROAD
WEST COTES DRIVE
NARBOROUGH ROAD
LEICESTER AND BURTON ON TRENT LINE
WEST COTES FARM
RED HOUSE
HARBOROUGH ROAD
ROWLEY FIELDS
ST MARYS MILLS
LOCK
BEDE HOUSE MEADOWS
CASTLE
INFIRMARY
INFIRMARY SQ
GAOL
SOUTH FIELDS
WELFORD ROAD
MIDLAND RAILWAY
CEMETERY
CATTLE MARKET
SIDING
FREEMEN'S MEADOW
AYLESTONE ROAD
FREEMEN'S ALLOTMENT GARDENS
NEW GAS WORKS
ALLOTMENT GARDENS
BOROUGH BOUNDARY
AYLESTONE PARK
FROM LONDON
COUNTY LUNATIC ASYLUM
VICTORIA PARK
VICTORIA PARK ROAD
LONDON ROAD
UPPER NEW WALK
REGENT ROAD
CROSS ROAD
GRANVILLE RD
PAVILION
CLARENDON PARK
CLARENDON PARK ROAD
ST LEONARDS RD
ELMFIELD AVENUE
STANLEY ROAD
HIGHFIELDS
EASTERN BOULEVARD ROAD
ST PETERS RD
St Peters Ch.
NEW PUBLIC RECREATION GROUND
BOUNDARY ROAD
to Evington
to Oadby
to Welford
from Aylestone
CAMPBELL ST
STATION
HUMBERSTONE GATE
HORSEFAIR ST
MUNICIPAL BUILDINGS
WELLINGTON STREET
SCALE 10 CHAINS TO AN INCH
Feet